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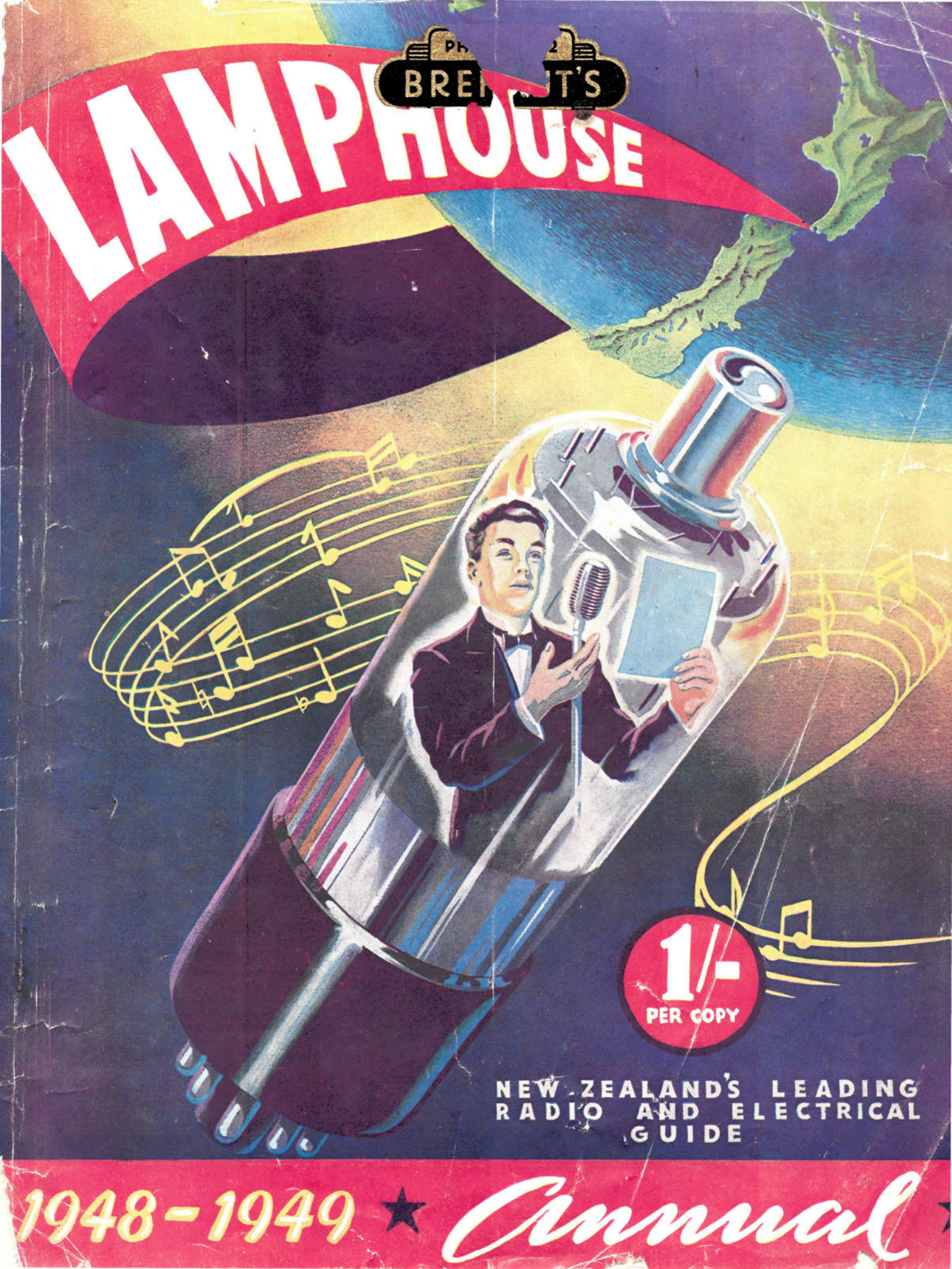

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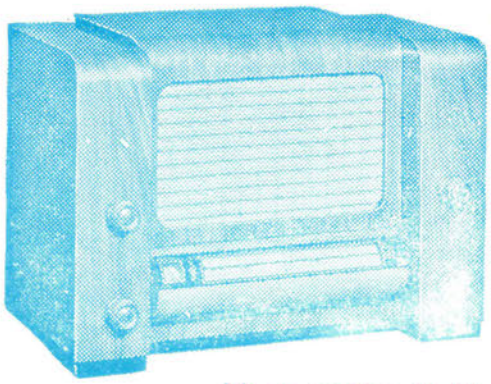
1948-1949 ★ Annual ★



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★ ★

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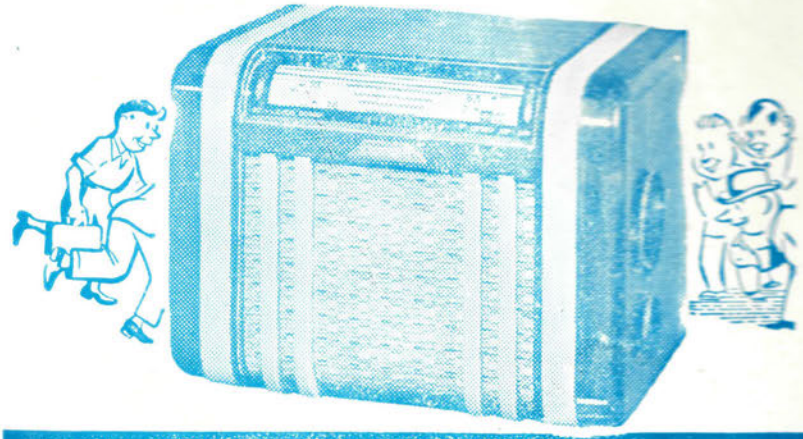

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BREHAUT'S RADIO SERVICE

# THE LAMPHOUSE ANNUAL 1948-49

THE page size of this year's Annual is back to pre-war size. Let us know what you think about it. Do you like large or small pages.

THANK YOU for any orders, small or large, which you may have sent during the past year.

THANK YOU for your many letters of appreciation and for appreciating our many difficulties during these unsettled post-war years.

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## IMPORTANT NOTICE

## *Exchange Rate—Reduced Prices*

**While this Catalogue was being prepared an alteration was made in the Exchange Rate. You will find many prices greatly reduced from last year, and you will receive full benefit of any further reductions in price which may be made for any reason whatsoever.**

**ELECTRIC LAMP HOUSE LIMITED**

**11 MANNERS STREET - - - - - - WELLINGTON**

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## SPECIAL FEATURES

**8-PAGE RADIO STATION LOG,** containing the Wavelength, Power and the best time to listen (N.Z. time) of Shortwave Stations throughout the world. Also full listings of all North American Broadcast, Australian and New Zealand Stations.


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| Australasian Broadcast Log | 111 |
| North American Stations | 111 |


**THE "EASY-BUILT" RECEIVERS.**

Details of a 5-Valve Broadcast Receiver and of a 4-Valve Portable Radio constructed by our new numbered components system. No previous set construction is necessary. These sets can be made by anyone able to use a soldering iron.


"Easy Built" Clipper 4-Valve Portable .. 68

"Easy Built" 5-Valve Broadcast 90


**RADIO DICTIONARY:** An up-to-date Dictionary covering brief descriptions of hundreds of Radio components and terms. Page 84

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# GENERAL INFORMATION

**PRICES:—The prices in this Catalogue should be taken as an indication only. Prices are fluctuating rapidly and all orders will be executed at the prices ruling at the date of supply.**

**TERMS OF BUSINESS.**—Our terms are cash with order. We buy for cash and sell for cash—that's why our prices are lower. If it is desired we will hold any moneys of regular customers in a deposit account for future purchases, otherwise any balance due will be returned with the goods.

**HOW TO ORDER.**—Order forms are always available for your convenience. It is only necessary to quote the catalogue number and short description when ordering, such as TE508—Iron Element.

**CATALOGUE NUMBERS.**—The first letter (T) of the number is for our reference. The balance of the catalogue number will always remain the same for the same article.

**FREIGHT.**—We pay freight on all retail orders over £1 value. Please include sufficient cash for postage on small orders.

**GUARANTEE.—Any goods that prove in any way unsuitable may be returned undamaged within seven days from receipt and your money will be refunded in full.**

**REFERENCE.**—Our Bankers are the National Bank of New Zealand, Ltd., Courtenay Place, Wellington.

**RETURNS.**—Should it be necessary to return goods, always put in a slip of paper with your name and address. When returning goods for credit or exchange, state invoice number in covering letter to ensure prompt attention.

**TELEGRAMS.**—Address telegrams to "Lamphouse," Wellington.

**REMITTANCES.**—Enclose cheque, pound notes, postal note, or money order to the full amount of your order. If you send coin or bank notes, be sure to register the latter. Make cheques and postal notes payable to the Electric Lamphouse, Ltd., and keep numbers for reference.

**DELIVERY.**—We endeavour to maintain a same day dispatch service. This is not always possible as at times goods have to be specially procured, and at times exceptional rushes take place. It is very seldom, however, that an order is held for more than one day after receipt.

**SUBSTITUTES.**—Owing to the present difficulty of obtaining supplies we suggest that you indicate on your order whether or not you wish us to substitute with similar articles in the event of the goods ordered being out of stock.

**POSTAL ADDRESS.**—All orders and general correspondence should be addressed to—


**The Electric Lamp House Limited**

11 MANNERS STREET - - - WELLINGTON, C.1.

Telephones 43-015 and 43-016

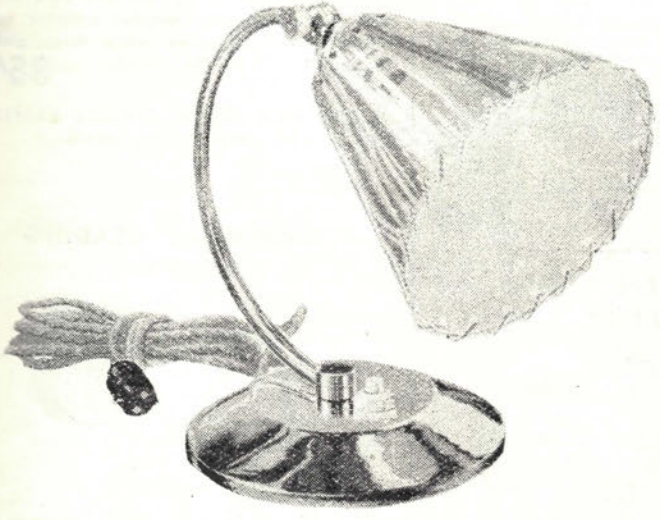

### A SUGGESTION

As it is much easier for us to make a refund along with your receipt than for you to get stamps or postal notes to remit a small balance that may be left owing when your receipt is sent, would it not save you inconvenience if you were always to send ample cash to allow for freight, etc.? We will refund the difference, or place it to your credit, according to your instructions. Do as hundreds of our customers do, send a blank cheque, which we will fill in when we have totalled your order. You can write across the top of the cheque "Not to exceed £5"—or £10, or £20, as the case may be.

THE LAMPHOUSE CATALOGUE

1948 1949

# The "ENSIGN" Chrome and Plastic Reading Lamp



Here is a DUAL-PURPOSE READING LAMP for use either on a Bedside-Dressing Table, or for hanging on the wall over the bed.

The PASTEL TINTED PLASTIC SHADE is mounted on a swivel so that you may have the light just where you want it.

An Ivory-topped ON-OFF Switch is mounted in the base in an easily accessible position. Each Lamp is fitted with 9ft. of flexible cord and a plug for either the light or hot-point—whichever you desire.

The glittering reflection from the combination of CHROME and PLASTIC make this lamp a

BEAUTIFUL ADDITION TO ANY ROOM.

Cat. No. TF921 - - PRICE Complete **52/6**

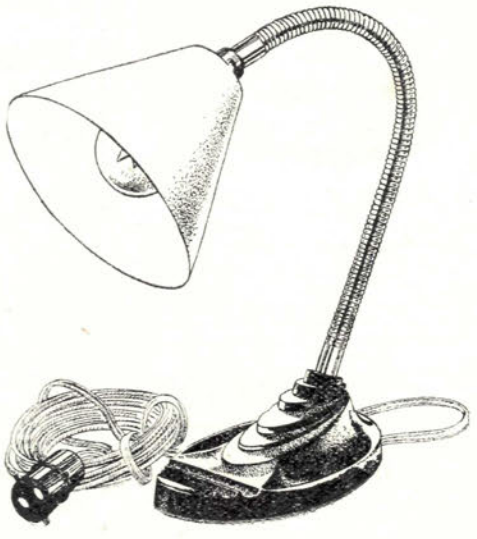
# The "ENSIGN" Flexible Arm Reading Lamp

A popular general purpose Flexible Arm Reading Lamp. Consists of a heavy cast base with a 15in. Chrome adjustable arm which may be moved or set to any angle required. Its flexibility makes it ideal as a Desk Lamp for the student, the reader and business man or any engaged in close work at the office or in the home.

All lamps have Chrome Arms, but bases are in different colours, including antique, black and silver, flecked gold, etc. Supplied complete with 9ft. cord, adaptor, shade and globe. Switch is mounted on lamp holder.

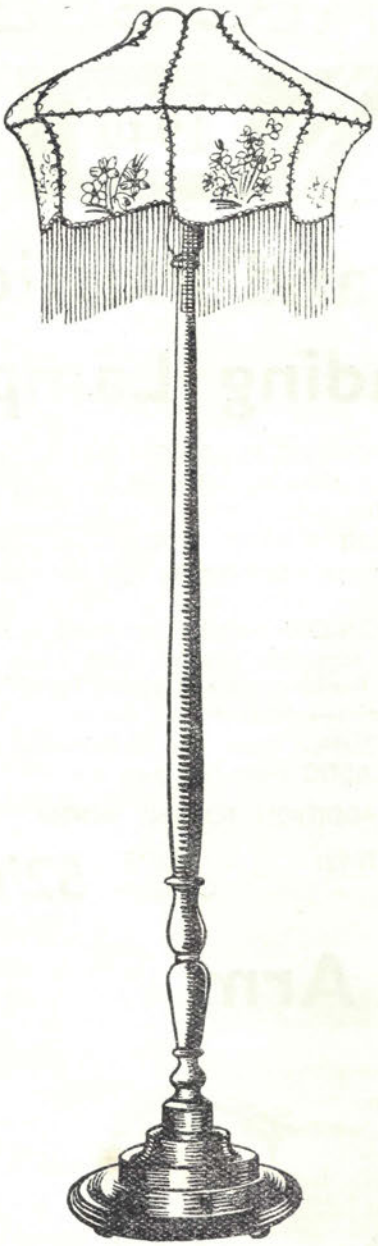
PRACTICAL AND NEAT!

Cat. No. TF900 - - - - - - - - - **43/6**



## FLOOR LAMPS

Turned in New Zealand from New Zealand wood.



Height to base of Lampholder, 61 in.; diameter of base, 14 in. Supplied complete with 12 ft. flexible cord. Lampholders with switch and shade holder.

The Lamp Shades are NOT included in the price.

Refer to pages 7-8 for suitable shades. shades.

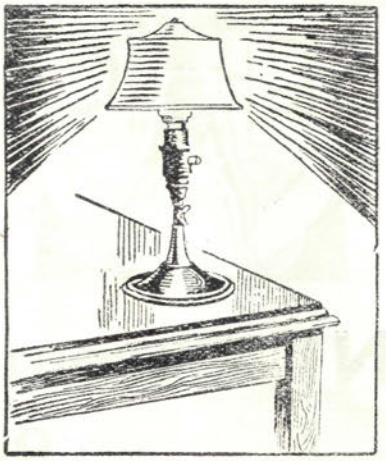
VARNISHED — HIGHLY POLISHED

Cat. No. TF920 .. .. **£4/19/6**

### *IMPORTANT!*

Owing to existing conditions prices in this book are given as a guide only. All orders will be executed at the rate ruling at the date of supply.

## THE PERLUX "CLAMPLITE"



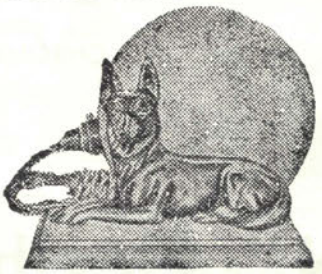
A really handy Reading Lamp which will clip on to the bed rail or will stand on a table. The shade is on a swivel and may be turned up or down. Finished in mottled colours. Complete with switch, lampholder, shade and globe, with approx. 6 feet flex.

Moulded in plastic.

Cat. No. TE53 .. .. .. **22/6**

Cat. No. TE53a—Complete with adaptor or plug .. .. .. .. **23/6**

## "ORNAMENTAL DOG" READING LAMP



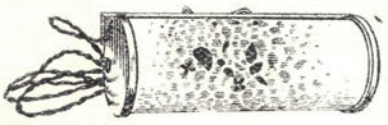
Here's the last word in a novel yet practical type of ORNAMENTAL READING LAMP. A highly polished casting of a dog is mounted on a wooden varnished base 8¾in. x 3in. x 1in. with a background of circular frosted glass. The globe fits on to a clip at the back of the glass and gives a beautiful effect when lighted. Supplied complete with 10ft. flex, holder with switch, globe and adaptor.

Cat. No. TF904 .. .. **45/-**

Similar to above except with lion ornament in place of dog.

Cat. No. TF905 .. .. **45/-** each

## TUBULAR PARCHMENT BED LAMP



Modern and attractive Bedroom Lamp. Can be hung on bed-rail or screwed to wall. Wood base and sides. Parchment shade. Length 11in., diameter of shade, 3½in. Supplied complete with 6ft. flex, switch and globe.

Cat. No. TF907 .. .. .. **27/6**

SPARE PARCHMENTS. Assorted colours.

Cat. No. TF908 .. .. .. 2/6 each

## ASH TRAY READING LAMP

Chromium tube fitted to black, wooden base 7½in. diam. Chrome ash tray and flush ivory push switch mounted. Supplied complete with 9ft. silk covered flex, parchment shade, globe and adaptor.—Cat. No. TF923 .. **35/-**

STATE YOUR SHADE COLOUR PREFERENCE WHEN ORDERING.

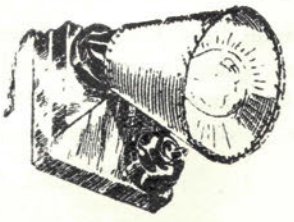
## "SWAN NECK" READING LAMPS

WALL LAMP, supplied with 3 yards flexible cord. Polished wood base, 5½in. diam. Bracket extends 9in. Parchment shade. Switch mounted flush in base.

Cat. No. TF902 .. .. **35/-** each

Ditto, but using smaller 6in. Chrome-plated Bracket.—Cat. No. TF901 .. .. **33/6**

## "DIAMOND SHAPED" READING LAMPS



Neat Wall Lamp, polished wood base, complete with switch, shade, cord and lamp.

Cat. No. TF910 .. .. **32/6** each

# LAMPSHADES

BRIGHTEN your home with these attractive Lampshades. Decorated types in many designs. Colours available: Pink, Red, Blue, Green, Orange and Lemon. Shades made from latest types of parchment and plastics. All Shades will be supplied with standard 1⅛in. hole for pendants, unless otherwise asked for. Practically all Shades can be supplied with clip fitting for clipping directly on light bulb (as used on table lamps) on request.

## EMPIRE SHAPE

Illustration shows standard "Empire" shape which can be supplied in various sizes as follows:—

*SIZE 3* (EMPIRE SHAPE)

Diameter 8in., height 6in. Suitable for small rooms and table lamps, etc.

Cat. No. 3/P/R Plain Parchment. Rayon laced .. .. .. 3/6 ea.
Cat. No. 3/D/R Decorated Parchment. Rayon laced .. .. .. 4/– ea.
Cat. No. 3/P/CT—Plain Parchment. Cotton Tape laced .. .. 2/9 ea.
Cat. No. 3/D/CT—Decorated Parchment. Cotton Tape laced .. 3/3 ea.
Cat. No. 3/P/Z Translucent Plastic Rayon laced. Plain .. .. 6/– ea.
Cat. No. 3/D/Z Translucent Plastic. Rayon laced. Decorated .. .. 7/– ea.

*SIZE 32* (EMPIRE SHAPE)

For small Floor Lamps, Bridge Lamps and for pendants in large rooms. Diameter 20in., height 10in. Four Panel construction with solid frame.

Cat. No. 32/P/R Plain Parchment. Rayon laced .. .. 21/– ea.
Cat. No. 32/D/R Decorated Parchment. Rayon laced .. .. 23/3 ea.
Cat. No. 32/P/Z Plain Plastic. Rayon laced .. .. .. .. 29/6 ea.
Cat. No. 32/D/Z Decorated Plastic. Rayon laced .. .. .. 35/– ea.

*SIZE 30* (EMPIRE SHAPE)

24in. Diameter Shade for Floor Lamps, etc. Height 13in.

Cat. No. 30/P/R Plain Parchment, Rayon laced .. .. .. 28/6 ea.
Cat. No. 30/D/R Decorated Parchment, Rayon laced .. .. 30/6 ea.
Cat. No. 30/P/Z Plain Plastic. Rayon laced .. .. .. .. 44/– ea.
Cat. No. 30/D/Z Decorated Plastic 49/– ea.

*SIZE 7* (EMPIRE SHAPE)

Diameter 5¾in., height 4½in. Candle type shade for wall brackets, small table lamp, 2 and 3 light fittings, etc., or for pendants.

Cat. No. 7/P/R Plain Parchment. Rayon laced .. .. .. 2/9 ea.
Cat. No. 7/D/R Decorated Parchment. Rayon laced .. .. .. 3/– ea.
Cat. No. 7/P/Z Translucent Plastic. Rayon laced .. .. .. 4/6 ea.
Cat. No. 7/D/Z Decorated Plastic. Rayon laced .. .. .. 5/– ea.

*SIZE 1* (EMPIRE SHAPE)

Diameter 10in., Height, 7in. Suitable for pendants and table lamps.

Cat. No. 1/P/CT Plain Parchment. Cotton. Tape laced .. .. 2/11 ea.
Cat. No. 1/D/CT Decorated Parchment. Cotton Tape laced .. 3/9 ea.
Cat. No. 1/P/R Plain Parchment. Rayon laced .. .. .. 3/9 ea.
Cat. No. 1/D/R Decorated Parchment. Rayon laced .. .. 4/6 ea.
Cat. No. 1/P/Z Plain Plastic. Rayon laced .. .. .. 7/11 ea.
Cat. No. 1/D/Z Decorated Plastic. Rayon laced .. .. .. 8/11 ea.

*SIZE 20* (EMPIRE SHAPE)

Diameter 12in., Height 7¾in.—12in. Shade for Pendants and Table Lamp.

Cat. No. 20/P/CT Plain Parchment. Cotton Tape laced .. .. 4/3 ea.
Cat. No. 20/D/CT Decorated Parchment. Cotton Tape laced .. 5/6 ea.
Cat. No. 20/P/R Plain Parchment. Rayon laced .. .. .. 5/– ea.
Cat. No. 20/D/R Decorated Parchment. Rayon laced .. .. 6/3 ea.
Cat. No. 20/P/Z Plain Plastic. Rayon laced .. .. .. .. 12/– ea.
Cat. No. 20/D/Z Decorated Plastic. Rayon laced .. .. .. 13/6 ea.

## SQUAT EMPIRE SHAPE

This type has been developed particularly for use with Table Lamps as its shape makes it ideal for that purpose. It is also very useful for pendants in rooms where a wide spread of light is required. Available in 10in. and 14in. sizes as follows:—

*SIZE 15* (SQUAT EMPIRE SHAPE)

Diameter 10in., Height 6in., all Rayon laced

Cat. No. 15/P/R Plain Parchment 3/9 ea.
Cat. No. 15/D/R Decorated Parchment .. .. .. .. 4/6 ea.
Cat. No. 15/P/Z Plain Plastic .. 7/6 ea.
Cat. No. 15/D/Z Decorated Plastic 8/6 ea.

*SIZE 6* (SQUAT EMPIRE SHAPE)

Diameter 14in., Height 6½in. All Rayon laced.

Cat. No. 6/P/R Plain Parchment .. 6/– ea.
Cat. No. 6/D/R Decorated Parchment 7/– ea.
Cat. No. 6/P/Z Plain Plastic 12/6 ea.
Cat. No. 6/D/Z Decorated Plastic 13/6 ea.

## SQUARE EMPIRE SHAPE

*SIZE 17* (SQUARE EMPIRE SHAPE)

7in. square x 6in. high. Bound in cotton tape suitable for pendants in small rooms.

Cat. No. 17/P/CT Plain Parchment .. .. 8/6 ea.
Cat. No. 17/D/CT Decorated Parchment .. 10/– ea.

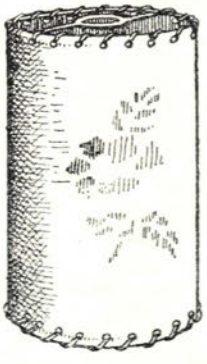
*SIZE 8* (SQUARE EMPIRE SHAPE)

10in. square x 7½in. high. Bound in Rayon braid. An attractive shade for pendants and certain types of table lamps.

Cat. No. 8/P/R Plain Parchment .. .. 13/– ea.
Cat. No. 8/D/R Decorated Parchment .. 15/6 ea.
Cat. No. 8/P/Z Plain Plastic .. .. 17/6 ea.
Cat. No. 8/D/Z Decorated Plastic .. .. 19/6 ea.

## HALL SHADE

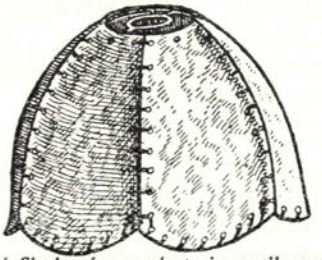
Ideal Shade for Halls, Passages, etc. Diameter 6in., Height 9in. Rayon laced.



Cat. No. 11/P/R Plain Parchment 3/9 ea.
Cat. No. 11/D/R Decorated Parchment 4/6 ea.
Cat. No. 11/P/Z Plain Plastic .. 7/11 ea.
Cat. No. 11/D/Z Decorated Plastic 8/11 ea.

## SMALL FANCY SHADES

### Tulip Design



Useful Shades for pendants in small rooms, for bracket lights and for two and three light fittings, etc. Laced with cotton tape.

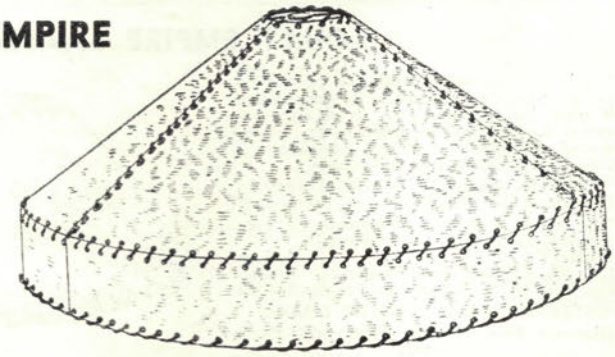
Cat. No. 40/P/CT 6in. Dia., 5in. High, Parchment .. .. .. 6/6 ea.
Cat. No. 40/P/Z 6in. Dia., 5in. High, Plastic .. .. .. 7/6 ea.
Cat. No. 41/P/CT 8in. Dia., 5½in. High, Parchment .. .. .. 8/6 ea.
Cat. No. 41/P/Z 8in. Dia., 5½in. High, Plastic .. .. .. 9/6 ea.
Cat. No. 45/P/CT 10in. Dia., 6in. High, Parchment .. .. .. 10/6 ea.
Cat. No. 45/P/Z 10in. Dia., 6in. High, Plastic .. .. .. 12/6 ea.

## SHADES FOR FLOOR STANDARDS

Empire shape in 20in. and 24in. Diameters, laced with rayon, 4-piece constructed—supported Frame.

Cat. No. 32/P/R 20in. Plain Parchment 21/–
Cat. No. 32/D/R 20in. Decorated Parchment .. .. .. 23/3
Cat. No. 32/P/Z 20in. Plain Plastic .. 29/6
Cat. No. 32/D/Z 20in. Decorated Plastic 35/–
Cat. No. 30/P/R 24in. Plain Parchment 28/6
Cat. No. 30/D/R 24in. Decorated Parchment .. .. .. 30/6
Cat. No. 30/P/Z 24in. Plain Plastic .. 44/–
Cat. No. 30/D/Z 24in. Decorated Plastic 49/–

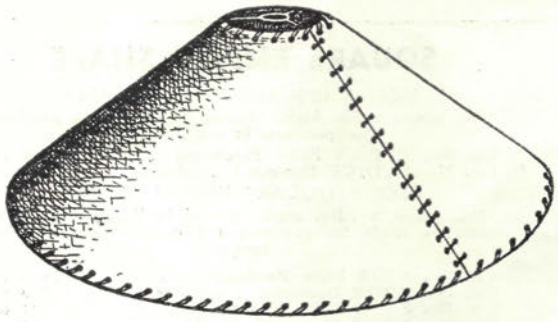
## EXTENDED EMPIRE SHAPE



A fancy 24in. Shade 10in. high. Used for floor standards, large rooms, etc. Ideal for over Billiards and Table Tennis tables, etc., etc. Laced in rayon.

Cat. No. 35/P/R Plain Parchment .. £1/7/6

Cat. No. 35/P/Z Plain Plastic .. £1/17/6



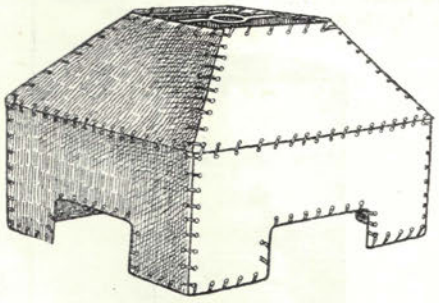
## FLAT EMPIRE SHAPE

24in. Diameter x 7in. High. For Floor standards and for hanging pendants where maximum spread of light is required. Laced with Rayon.

Cat. No. 37/P/R Parchment .. .. 18/6
Cat. No. 37/P/Z— Plastic .. .. 32/6

## STATE COLOURS WHEN ORDERING!

## FANCY SHADES

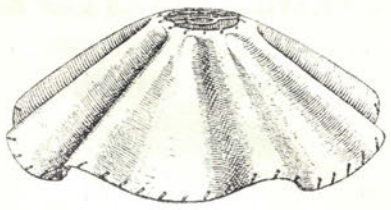


Made in two sizes this Shade is very attractive both in Parchment and Plastic. Cotton Tape laced.

Cat. No. 19/P/CT 10in. x 8½in. high. Parchment .. .. .. 17/9
Cat. No. 19/P/Z 10in. x 8½in. high. Plastic .. .. .. .. 25/–
Cat. No. 29/P/CT 13in. x 8½in. high. Parchment .. .. .. 21/9
Cat. No. 29/P/Z 13in. x 8½in. high. Plastic .. .. .. .. 29/6

**MAIL ALL ORDERS TO . . .**
**THE LAMPHOUSE,**
11 MANNERS STREET, WELLINGTON, C.1.
New Zealand's Leading Radio and Electrical House.

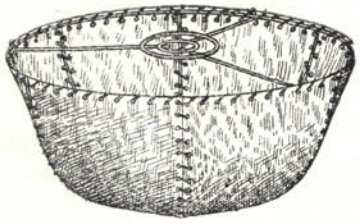
## WAVED SHADE



One of the latest shapes and a very popular type. Diam. 12in., Height 6½in.

Cat. No. 36/P/Z Plain Plastic .. .. 13/6
Cat. No. 49/P/Z Plain Plastic 10½in. dia. 12/6
Cat. No. 48/P/Z Plain Plastic 9in. dia. 7/6

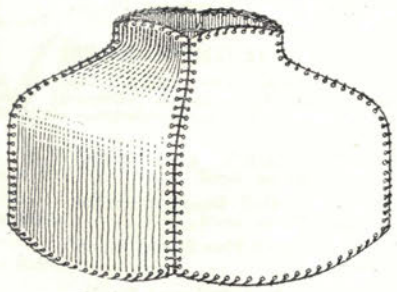
## INVERTED SHADE



For those wanting a soft mellow light this shade is ideal. Frame is complete with support which allows shade to be suspended from ordinary lamp socket. Diameter 12in., Depth 5½in.

Cat. No. 42/P/CT Plain Parchment 15/– ea.
Cat. No. 42/P/Z Plain Plastic .. 22/6 ea.

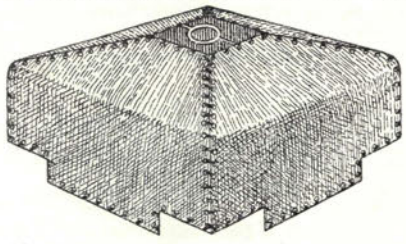
## FOUR-PIECE FANCY SHADES



*Shape 12*

These four-piece Shades are very popular and can be supplied either in Plastic or Parchment as follows. All laced cotton tape. 13in. x 11in. high:—

Cat. No. 12/P/CT Plain Parchment .. 15/–
Cat. No. 12/D/CT Decorated Parchment 19/–
Cat. No. 12/P/Z Plain Plastic .. .. 21/–
Cat. No. 12/D/Z Decorated Plastic .. 25/–



*Shape 34*

Cat. No. 34/P/CT Plain Parchment .. 15/–
Cat. No. 34/D/CT Decorated Parchment 17/–
Cat. No. 34/P/Z Plain Plastic .. .. 21/–
Cat. No. 34/D/Z Decorated Plastic .. 25/–

# PLASTIC, METAL LAMPSHADES

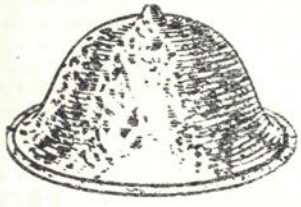
## OPAL TYPE SHADE

Moulded in New Zealand, these bakelite shades take the place of the old glass opal shades. Very strong and light. Supplied in plain white and pastel tints.

White—Cat. No. TF560 .. **1/8** each

Tinted—Cat. No. TF561 .. **1/9** each

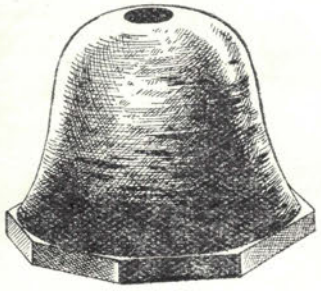
## "NIPPY" LAMPSHADES



Made of translucent bakelite, these shades are fitted with a wire clip which clamps direct on to the lamp bulb, making them ideal for adjustable table lamps, etc. Available in most popular colours. Diam. 5½in.

Cat. No. TF255 .. .. **2/-** each

## "BELL" SHADES



A novel shape in Plastic Shades. Tinted in a Pink Pastel toning. Very strong yet light.
Dimensions: Diameter, 6½in.; height, 5in.

Cat. No. TF257 .. .. .. **3/6** each

## "CLIP-ON" SHADES

Another fancy shape in Plastic Shades. Several pastel tonings. Provided with clip for attaching to Reading Lamp bulb, etc. Dimensions: Diameter, 6in.; height, 3½in.

Cat. No. TF256 .. .. **2/11** each

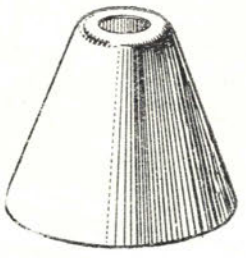
## THE "PLASTIC COOLICON"

"COOLICON" Lampshades are ideal for all lighting, whether in the home, warehouse or factory. There are two types in these fittings; one plastic and the other vitreous enamelled steel. The plastic type shown above is ready to fit on to the standard lampholder—no accessories are necessary. The plastic is strong, practically unbreakable and will not discolour with the heat.

9in. Type — Takes 40/75 watt globes. Cat. No. TF1092 .. **8/9** each

11in. Type—Takes 100/150 watt globe. Cat. No. TF1102 .. **10/6** each

## BAKELITE SHADES



Cat. No. TF661—4¾in. high, 5¾in. diam. Blue, Green, and Pink.

**2/1** each

## TERRACED PLASTIC SHADE

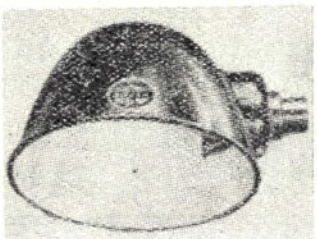
4¾in. high, 4¾in. diameter, available in Pink and Green.

Cat. No. TF662—

**1/10** each

## "BENJAMIN" LIGHTING REFLECTORS

*"BENJAMIN" Local Lighting Reflectors are recommended for the lighting of areas where the work in hand requires increased illumination or where obstructions make other lighting insufficient.*



*These shades are made of heavy gauge sheet steel, crystal porcelain enamel; white inside and green outside. Standard 1¼in. hole for easy attachment to ordinary lampholder.*

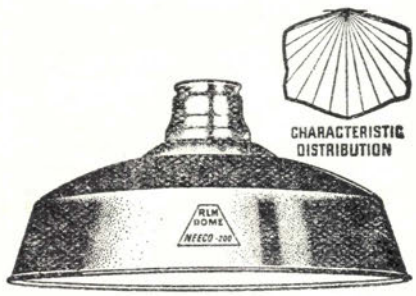
EXTENSIVE REFLECTOR, 6½in. diameter, takes 60/75 watt lamp.
Cat. No. TF8347 .. .. **15/9**

HORIZONTAL REFLECTOR, 6½in. (as illustrated), takes 15/75 watt lamp.
Cat. No. TF8329 .. .. **16/8**

EXTENSIVE REFLECTOR, 7½in. diameter. Takes 100 watt lamp.
Cat. No. TF8367 .. .. **17/6**

INTENSIVE REFLECTOR, 7½in. diameter. Takes 100 watt lamp.
Cat. No. TF8368 .. .. **17/6**

## R.L.M. REFLECTORS



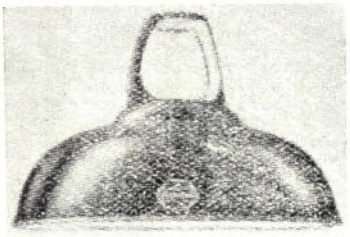

Steel Reflectors, enamelled green outside, white inside.

Cat. No. TF925—12in .. .. **20/-**

Cat. No. TF926—14in. .. .. **23/6**

Cat. No. TF927—16in. .. .. **26/-**

## THE "METAL COOLICON"



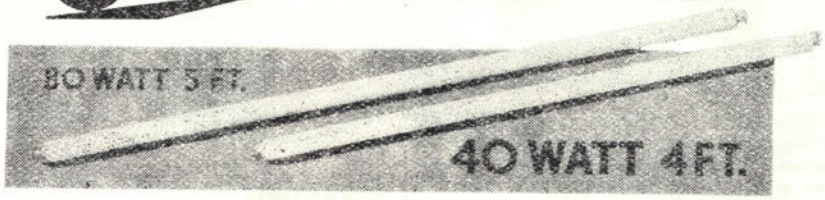
This shade is similar to the plastic version, except that the framework is of a green vitreous enamelled sheet steel. The inside is coloured white to give the maximum in lighting efficiency.

9in. Size — Takes 40/60 watt lamp.—Cat. No. TF1006 .. **9/9**

11in. Size—Takes 75/100 watt lamp.—Cat. No. TF1008 .. **11/9**

# FLUORESCENT LIGHTING & FITTINGS

## Osram DAYLIGHT & WARM-WHITE FLUORESCENT LAMPS




This new modern lighting is becoming increasingly popular both for commercial and household use. The high output and low current consumption makes Fluorescent Lighting economical as well as attractive. Gives approximately three times as much light as an ordinary globe using the same amount of current. A double 40-watt unit would produce as much light as a 200-watt electric light globe. Ideal for the home, office, warehouse, shop, factory, schoolroom, restaurant, etc.

THERE'S NO GLARE—AND PRACTICALLY NO HEAT!

### 5ft. 80-WATT FITTING

Designed for Factories, Warehouses, Halls, Restaurants or other spacious buildings. Fitting incorporates Choke, Condenser, Starter, Channel, Tube, etc., and 6ft. flex. Complete with 5ft. 80-watt Tube.

Cat. No. TL704 .. .. **£10/6/6**

### Tube Colouring

Tube can be supplied in three different tonings—Daylight, Warm-white or White. Give your preference when ordering.

### Spare Tubes

Cat. No. TL700—
4ft. 40-watt .. .. **19/9** each

Cat. No. TL701—
5ft. 80 watt .. .. **28/6** each

### 4ft. 40-WATT FITTING

This is the unit for use in the home, over the office desk or for window lighting in shops, etc. Fitting incorporates Choke, Channel, Condenser, Tube and 6ft. Rubber Flex.

### *No Wiring Necessary!*

All ready to fit on to the ceiling or other support and plug into a light socket or power point. COMPLETE WITH 40W. TUBE.

Cat. No. TL702 .. .. **£7/9/-**

### DOUBLE 4ft. 40-WATT FITTING

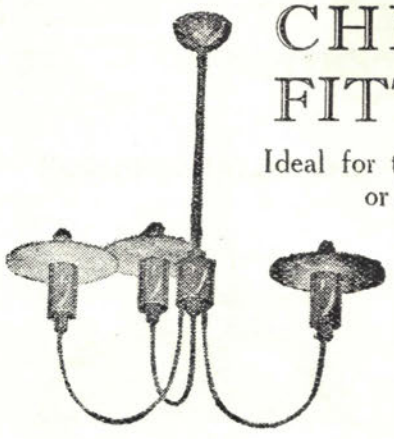
Similar to above but comprises 2 40-watt Tubes mounted on same channel. For office work, showroom lighting, large rooms, etc.

COMPLETE WITH TWO TUBES, FLEX, ETC.

Cat. No. TL703 .. .. **£11/15/-**

## CHROME FITTINGS

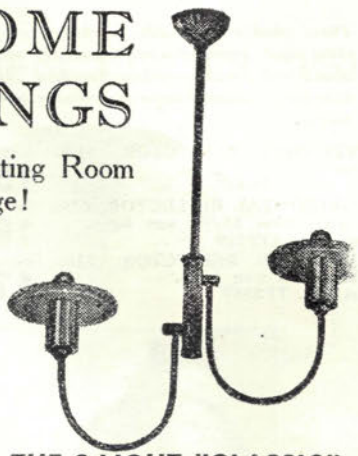
Ideal for the Sitting Room or Lounge!



### THE 3-LIGHT "CLASSIC"

A modern Direct Lighting Fitting, with 3 separate Chrome arms bent in the form of half-circles. All metal parts are Chromium plated. The Pendant measures 23in. from top to bottom, but can be cut to suit any ceiling. 8in. diameter glasses, frosted and with clear edge. Ready wired complete with 60-watt globes.

Cat. No. TF701 .. .. **£7/17/6**

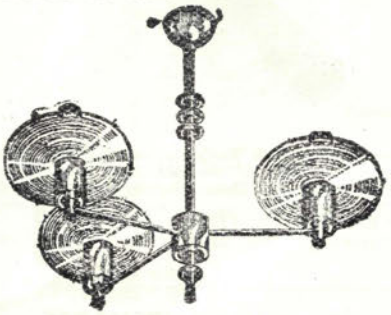


### THE 2-LIGHT "CLASSIC"

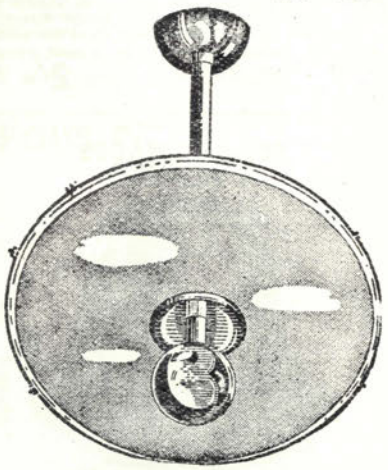
Similar to the 3-light type described, but taking only two globes. Chrome arms bent in the form of half-circles. Height of Pendant 23in., 8in. diameter glass discs. Ready wired and complete with globes.

Cat. No. TF700 .. .. **£6/9/6**

### *MODERN, UP-TO-THE-MINUTE DESIGNS IN 3-LIGHT FITTINGS*



Here is a fitting that could really brighten up the best of homes. The pendant measures 23in. from top to bottom but can be cut to suit any ceiling. Chromium Canopy at top hides all wiring. The three supports extend 8in. from the pendant. The three circles of lined and frosted glass (8in. diameter) fasten to special brackets as illustrated. Fancy chrome trimmings add to the beauty of this unit. Ideal for the modern home. Complete with 60 watt globes.—Cat. No. TF702 .. **£8/10/-**



Similar class of fitting to that described above; instead of the three individual glasses this unit comprises the one circle 24in. diameter, with the three globes mounted horizontally slightly above glass. Glass is frosted and lined and the height can be adjusted to suit your own requirements. Heavy Chrome Ball on end of pendant 4in. diam., height of pendant 20in. This can be easily cut to suit your own ceiling. Recommended for medium to large room or for the modern office, etc. Complete with 60 watt globes.

Cat. No. TF703 .. .. **£8/12/6**

### LAMPHOUSE GUARANTEE

Any goods that prove in any way unsuitable may be returned undamaged within seven days from receipt and your money will be refunded in full.

## SHADE HOLDERS

Shade Holders for table lamps. Oxidised finish. Hinged in the centre so that the shade can be tilted.

Cat. No. TG36 **2/3** ea.

Similar to the above, but chrome plated.

Cat. No. TG37 **3/3** ea.

## SHADE HOLDERS

For fixing Shades to table lamps. Non adjustable type.

Cat. No. TG38 .. .. **2/3** each

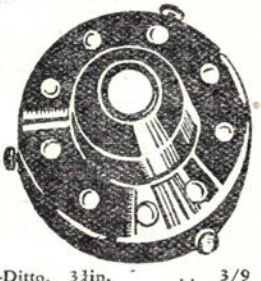
## SHADE CLIPS

Can be attached to any Lampshade. By using this Clip an ordinary lampshade can be converted to fit a reading lamp without the usual shade carrier.

Just clips straight on to the globe.

Cat. No. TF381 .. .. .. **6**D. each

## GALLERIES FOR GLASS LAMP SHADES



All the following have a standard 1¼in. hole for fitting on to standard size lampholders.

Brown Bakelite Moulded Gallery, 2¼in.—

Cat. No. TF350— 1/3 each

Cat. No. TF351—Ditto, 3¼in. .. 3/9
Cat. No. TF352—Ditto, 4¼in. .. 4/-
Cat. No. TF356—Ditto, 4¼in. white .. 4/3

METAL GALLERIES AS ABOVE.
Oxidised Copper.

Cat. No. TF353—2¼in. .. .. .. 1/3
Cat. No. TF354—3¼in. .. .. .. 3/6
Cat. No. TF355—4¼in. .. .. .. 4/9
Cat. No. TF379—Ditto, with hook .. 6/-

CHROME FINISH.

Cat. No. TF357—2¼in. .. .. 1/9
Cat. No. TF358—3¼in. .. .. 4/9
Cat. No. TF359—4¼in. .. .. 5/3

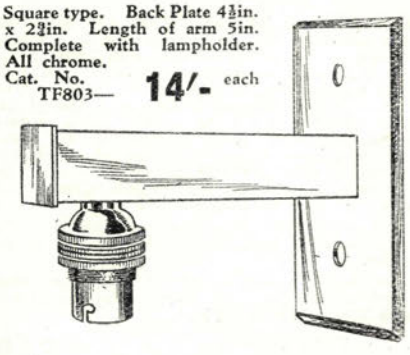
CHROME CEILING GALLERIES.

Cat. No. TF360—3¼in. .. .. .. 7/6
Cat. No. TF361—4¼in. .. .. 8/9

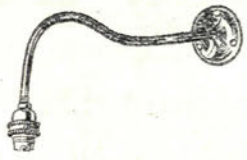
## WALL BRACKET

Square type. Back Plate 4½in. x 2¾in. Length of arm 5in. Complete with lampholder. All chrome.

Cat. No. TF803— **14/-** each



## WALL BRACKETS



Nickel-plated 9in. Wall Brackets, complete with Lampholder.—Cat. No. TF800 .. **12/-** each

## Lighting EXTENSION CORDS

**Read in Comfort!**

For taking the light where you want it. Ten feet long and supplied with an insulated shockproof lampholder. Extra long lengths can be made up at 9d. yard extra.

Cat. No. TE51 .. .. .. **5/9**

Cat. No. TE52 (with switch holder) **9/6**

## FITTING ACCESSORIES

DEEP 3-HOOK CEILING CANOPIES.

Has three hooks for hanging bowl fittings, etc. Deep enough to fit right over the ceiling rose, thus saving the expense and trouble of removing the ceiling rose and block to fit a special connecting block. Oxidised copper finished.

Cat. No. TF310 .. .. **4/3**

### SHALLOW 3-HOOK CEILING PLATES

Serves same purpose as the Deep 3-Hook Canopy described above. The mounting plate is flat, which necessitates the removal of the ceiling rose. Diameter 3in. Oxidised Copper Finish.

Cat. No. TF309 .. **3/10** each

Similar type of plate but with Single Hook.

Nickel Finish.—Cat. No. TF313 **3/9** each

### CHROME CHAIN

For Hanging Bowl Fittings, etc., 1¼in. x ¾in. Cross Links. Also ideal for Hanging Mirrors.

Cat. No. TF316 .. .. **3/3** yard

### HOOKS AND BUTTONS

¾in. Nickel Plated Hooks, complete with washers and nut.—Cat. No. TF323 **1/9** ea.

### BOWL BUTTONS

Oxidised. Complete with washers and nuts.

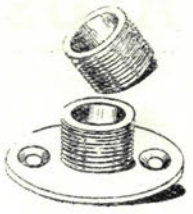
Cat. No. TF325 .. .. .. **5**D. each

*Prices for other Fitting Accessories on application.*

## NIPPLES

Threaded Brass Tube for making table lamps, etc. Fit standard ⅜in. lampholders.

Cat. No. TG200— **6**D. each



## FLANGES

Cat. No. TG206, ⅜in. .. .. **8**D. each

## FLANGES

Metal Conduit Flanges to fit ⅝in. Conduit.

Cat. No. TN1 w/male thread .. **4**D. each

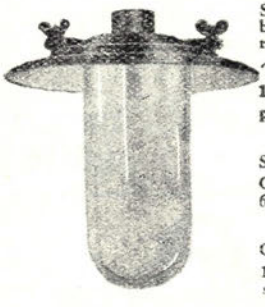
Cat. No. TN2 w/female thread **4**D. each

## Well-Glass Watertight Fittings

### For OUTSIDE LIGHTING

Cat. No. TE842— 60 watt size. Complete with holder. **14/-** each

Cat. No. TE841— 150 watt size. Complete with holder. **16/-** each



Similar to above, but with enamelled reflector.

Cat. No. TE857A, 150 watt size. Complete .. **17/3**

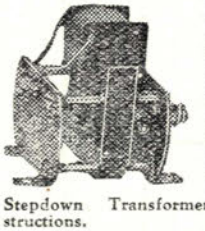
SPARE GLASSES

Cat. No. TE844— 60 watt size **5/9**

Cat. No. TE843A, 150 watt size **6/9**

## "SIGNALLER" MODEL MOTORS

The "Signaller" 4-6 Volt AC/DC Electric Motor is a model of a full size Motor. Series Wound, Tri-Pole Armature, Copper Brushes, Laminated Field Magnet. Ruggedly constructed. Suitable in every way for Model driving, "Meccano," "Trix," etc., etc. Provision made for screwing to baseboard. Motor is reversible! Operates from 4-6v. Battery or Stepdown Transformers. Complete with instructions.



Cat. No. TM690 .. .. .. **35/3**

# AIDS TO EASIER HOUSEKEEPING!

## "COYLROD" TANK HEATERS

Water Heaters for permanent installation in Tanks, Water Cylinders, etc.

Cat. No. TE540— 750 watt **22/-** each

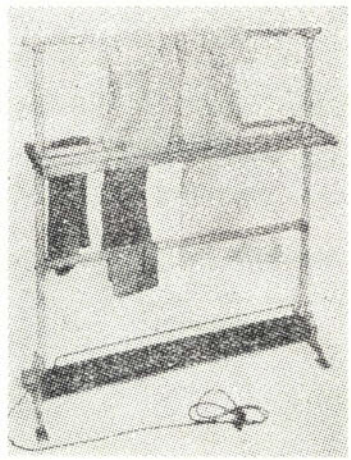
Cat. No. TE541—1000 watt **22/-** each

Cat. No. TE547—1500 watt, 3 heat type .. .. **37/6** each

Brass Flanges for fixing above.

Cat. No. TE543 .. .. .. **5/9** set

## "HAYMAN" CLOTHES DRYER



THE SOLUTION TO WET WEATHER WASH DAYS!

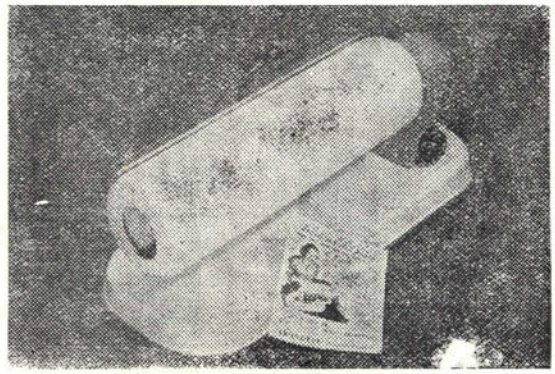
An electrically heated Airing and Drying Rack with 18ft. of Drying Rods in a floor space of 3ft. x 1ft. Children's Clothing, Bed Linen, Towels, Socks, Napkins—anything from a Bib to a Blanket made bone dry indoors, Day or Night, Wet or Fine. Operates for 5 hours for 1d. Gives a constant stream of warm, dry air, rising through the garments. 12 months' guarantee. Fitted with 6ft. flex and 3-pin plug top.

Cat. No. TE288 .. .. **£6/15/-**

## Ironing Day can be an EASY Day

IF YOU USE AN **"IRONETTE"**

# ELECTRIC IRONER



**With the "IRONETTE" any woman can easily cut one or two hours off her usual ironing time; can iron from 50 to 200 lbs. of laundry each week without the least bit of fatigue.**

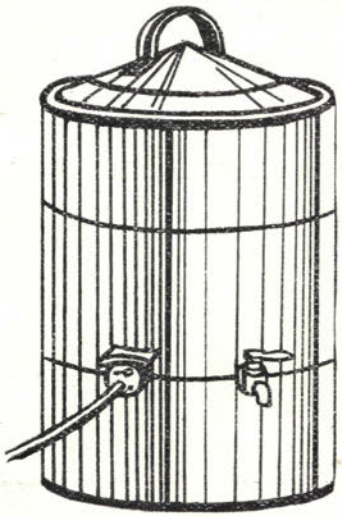
**You, like thousands of other housewives, can dispense with the ironing day "lame back," sore feet, and that "all in" feeling, by investing in an "IRONETTE."**

***Here are* 5 FEATURES of the HOUSEWIFE'S DELIGHT:—**

1. **It irons everything—sheets, shirts, ruffled curtains, cottons, silks, woollens, etc.**
2. **It's portable. Dimensions: Length 29in., height 10in., width 15in. Plugs into an ordinary Hotpoint.**
3. **It's Safe; it's easy to Operate.**
4. **It's Economical — uses the same amount of electricity as the ordinary household iron.**
5. **Each "Ironette" is covered by a 12 months' guarantee.**

***Iron at Leisure Have More Time for Pleasure*** Cat. No. TE851

**with an "IRONETTE"** **£29**



# The Copper

***That* Doesn't Smoke!**
***That* You Don't Have to Stoke!**
***That* You Don't Have to Clean!**
***That* is so Economical!**

# The "Oxford" 14 Gallon Electric Copper

Just plug into a hotpoint. The ideal means of electric washing. Copper is supported in a robust outer iron casing as illustrated. Filled with water and clothes takes approximately 1 hour to boil at summer temperatures, in winter a little longer. The 3000-watt heating element is housed in special circulating chamber under the copper, which ensures maximum efficiency, quick heating and fast, continuous movement of water right through the clothes as though worked by a motor-driven pump. By this means the clothes are washed quicker and cleaner than in a washing machine.

Circulating chamber well lagged for greatest efficiency. Standard finish, dark green, special colours to order.

Electric coppers save the cost of a chimney; they are quicker, cleaner, and mean a lot less work. Height 29in., diameter 19in.

Cat. No. TE64 .. .. .. .. **£18**

## ELECTRIC CUPBOARD HEATERS

Keep your Household Linen dry and free from dampness. Here is a Cupboard Heater that will operate at an almost negligible cost; can be mounted on the floor or screwed to the wall in a vertical or horizontal position. Emits warm, dry air from a large low temperature heating surface.

OPERATES FOR SEVEN HOURS FOR ONE PENNY.

Size actual unit: Length 2ft., Diameter 2in.; protecting Gauze Surround, 4in. high x 5in. wide; 230 v.—150 watts. Supplied without flex.—Cat. No. TE289 .. .. **50/-**

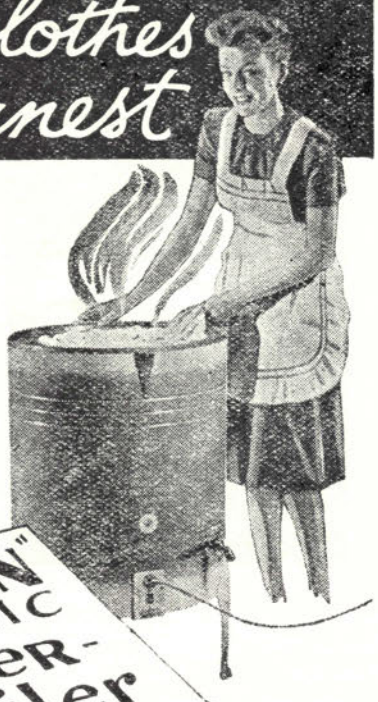
**6ft. Cord and 3-pin Plug fitted at 6/- extra.**

SAFE — RELIABLE — MODERN

## " HAYMAN " ELECTRIC WRINGER

For use with "Hayman" Laundry Unit, or as an independent Wringer to clamp to wooden or concrete tubs: Equipped with safety stop: Wrings two ways: Plugs into standard 3-pin wall socket: Occupies no floor space: Guaranteed 12 months to original user: (State whether for Combination Laundry Unit, or as an independent Wringer).
Cat. No. TE867 .. .. .. **£37**

# Boiled Clothes are Cleanest



**A very popular handsome model of modern design. Efficiently lagged. Attractive nickel-plated rim, spun lid, 2-heat switch. Red Pilot Lamp, drain tap, 2yds. flex cord. A very sturdily built washer for a lifetime of service.**

**Diameter 21in., height 2ft. 8in. Elements, 2,200 watts, 230 volts. 14 gallon capacity. Plugs into standard 3-pin plug socket.**

THE "HAYMAN" ELECTRIC Washer-Boiler

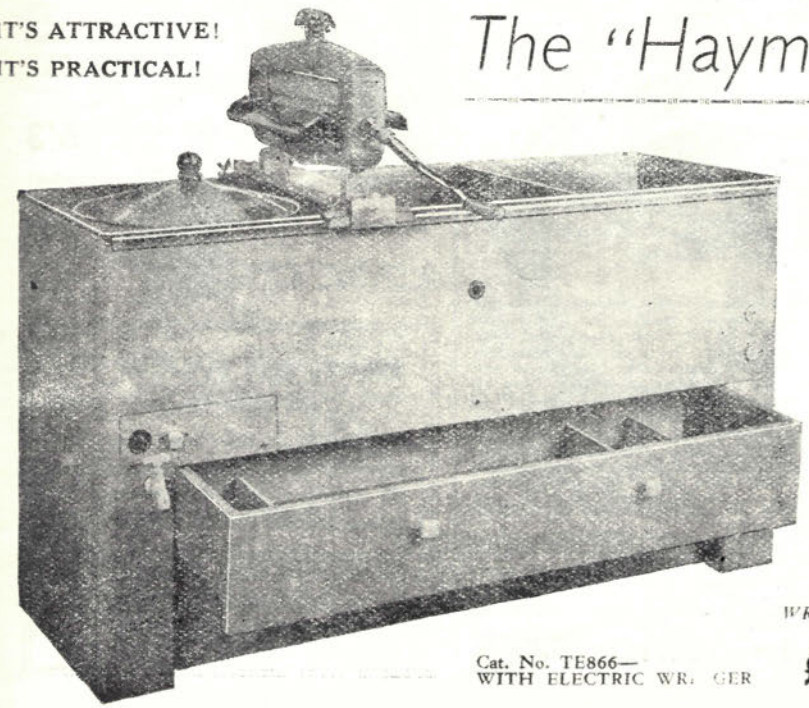
Cat. No. TE860
**£17/11/-**
Complete

**NOTE THESE UNIQUE FEATURES:**

Boils Electrically.
Hygienic, Snow-white Wash.
No Damaged or Torn Garments.
Ideal for New Homes (no chimney or Hearth needed).
Low Running Cost (less than 3d. wash).
Everlasting — Copper throughout.
Fast Boiling.
Washes Woollen and Coloured Garments.
Reasonably Priced.
Wonderful for Bottling Fruit, etc.

***A COMPLETE LAUNDRY IN ONE UNIT!***

**IT'S ATTRACTIVE!**
**IT'S PRACTICAL!**



# The "Hayman" Patent Combination Electric Laundry Unit

Incorporates all of the following: 14-gallon Electric Washer-Boiler, 2 large everlasting shining Metal Tubs, Built-in Ironing Point, Ironing Table Top, Ironing Skirt Board, Spacious Drawer, simple and easy hand-operated attachment for woollens and coloureds, convenient Soiled Clothes Bin. AND IT'S FITTED WITH AN ELECTRIC WRINGER!

The illustration shows the unit using a hand-wringer, but this "Housewife's Delight" can now be supplied with a Motor-Driven Wringer which will slide as shown to any desired position over tubs and boiler. When not in use the Wringer slides up to the end of the Unit and the Ironing Top is fitted in place.

Actual Dimensions of Unit: Length 5ft. 1in., width 2ft., height 2ft. 9in. Uses a new type of electric washer that *boils* and washes clothes snow-white without labour and at trifling cost by the scientific and hygienic method of the *boiling water process.*

BANISH THE HARDEST WORK OF WASH DAY!

*WRITE FOR A DESCRIPTIVE PAMPHLET TODAY!*

Cat. No. TE866— WITH ELECTRIC WRINGER **£91**

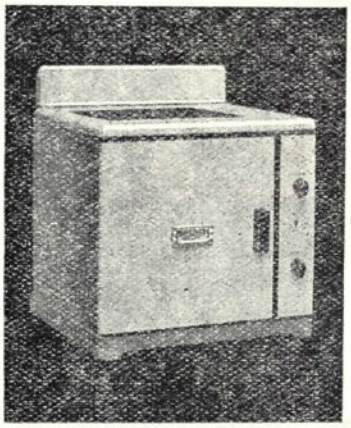
Cat. No. TE868— WITH HAND WRINGER **£69/5/-**

## ATLAS RANGETTES

Modern Rangettes, which will plug in to any heating point. Finished in finest cream enamel.

COMPLETE WITH 4½ft. FLEX and 3-PIN PLUG

Cat. No. TE32 .. .. **£15/10/-**

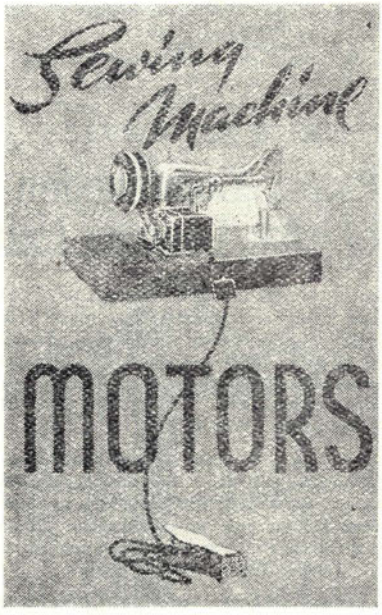


| | Width. | Depth. | Height. |
|---|---|---|---|
| Oven .. .. | 12 in. | 12⅝in. | 12½in. |
| Cooking Top .. | 17½in. | 14½in. | — |
| Floor Space .. | 17⅜in. | 15¼in. | — |

Height to Cooking Top 16½in.

Top Element: 10 x 8in., 1700 watts.
Oven Element: 800 watts.
Total Loading: 2500 watts.

## SEWING MACHINE MOTORS




"MUM'S' BIG MOMENT

**Yes, it would really be "Mum's" Big Moment to receive one of these English 230-volt Sewing Machine Motors. Fits all makes of household Sewing Machines and is supplied complete with variable foot control for regulating the speed. With Flex and light.**

**Cat. No. TM663 .. .. £8/16/6**

## CLEANER HOMES WITH LESS LABOUR

No pushing, pulling, or lifting of heavy furniture, no stooping, no climbing, straining, or back-breaking, beating, no taking down of draperies or curtains if you own a "KNIGHT" ELECTRIC CLEANER.

### Complete Equipment Includes:

7in. Oval Brush; 8½in. Nozzle; "Nosie Parker"; Curved and Straight Extension Tubes; 5ft. 6in. Covered Flexible Metallic Hose; 15ft. Flexible Heavily Braided Cord, with plug and switch connections.

Electric cleaning is now within the reach of every home. The "Knight" is a thoroughly efficient, high-grade cleaner—a marvel of beauty, simplicity and SAFETY—yet you get it at about half the usual cost because of our modern buying and selling policy.

We import direct from the factory in England, so as to cut out all intermediate charges and profits. We are proud of this Cleaner, and the fact that we can sell it at £14/10/- because we know of similar makes of cleaners that sell for nearly twice as much.

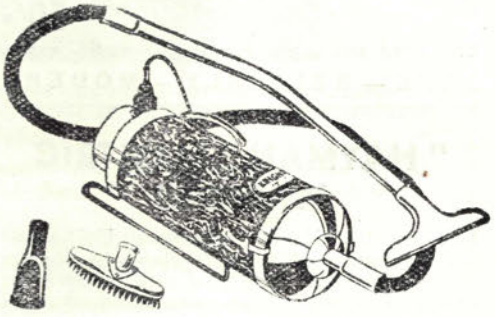
## Use a "KNIGHT" All British Cleaner

And the home will be cleaner, freer from dust. The enormous suction power of the "Knight" extracts every particle of dust, grit, fluff, animal hairs, etc., from carpets, upholstered furniture, bookcases, stairs, cupboards, etc.

Don't be a slave—let the "Knight" do the work. Send for one today. Can be used both on AC or DC 230-volt supply.

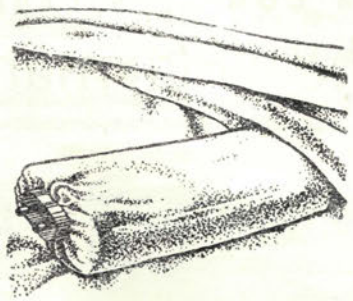
### *Try it at Our Risk!*

Let us send you a "KNIGHT" ELECTRIC CLEANER—try it out in your own home, and if you are not satisfied in every way we will refund your money in full, including return delivery charges. Our guarantee is your assurance of fullest protection. You can't lose.



Cat. No. TE200 **£14/10/-**

## "MONARCH" BED WARMER



This new electrical device dispenses with the old-fashioned hot-water bottle. To heat it you simply connect it to the power supply and leave it for three minutes. It is then disconnected, and will retain a comfortable heat under the bed clothes for a number of hours. May be taken in your motor-car to add comfort to travelling, or to the pictures as a foot warmer. Inexpensive to run, and, of course, invaluable in the sick room. It is extremely handy for people working at desks, tables, etc., who suffer from cold feet. Cost about 1d. per week for current. Can be bought without plug or cord or complete.

(The household iron or toaster cord set will fit the Monarch Bed Warmer).

Cat. No. TE82—Monarch Bed Warmer .. .. **27/6**

Cat. No. TE82A—Monarch Bed Warmer, with 3-pin Plug and Cord Set .. **34/6**

## TOASTER TRAYS

Made of Moulded Bakelite in following colours: Red, Cream, Black, Green. For standing under toasters to catch crumbs, etc.—as well as many other home uses. Size (overall) 10⅜in. x 7in.

Cat. No. TE761 **5/3**

Special Trays (drilled) for Speedee Hostess Toasters.—Cat. No. TE760 .. .. **5/3**

Special Trays (drilled) for "Speedee" Tiffen Toasters.—Cat. No. TE759 .. .. **7/6**

### PRICES ARE SUBJECT TO ALTERATION

All Prices in this book must be regarded as an indication only—all orders will be executed at ruling prices.

**THE ELECTRIC LAMP HOUSE LIMITED,**
11 MANNERS STREET,
WELLINGTON, C.1.

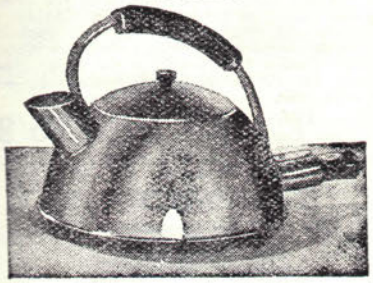
## "SPEEDEE" ELECTRIC KETTLE

The fastest made. Built of extra heavy gauge copper and finished in gleaming everlasting chromium plate. It is the aristocrat of kettles. The "Speedee" Kettle will save you money and steps. Used right on the afternoon tea table, it is at home in a setting of dainty china and beautiful linen — at once the admiration and envy of your friends. Keeping the water hot as it does for some time after switching off, it obviates the need for the hostess to rise and prepare that "second cup."

Cat. No. TE30—5-pint, 1500 watt .. **83/6**

Cat. No. TE29—3-pint .. .. **75/-**

## "ULTIMATE" ELECTRIC KETTLES



These highly plated Electric Kettles are fast-boiling, and are made in accordance with "Ultimate" usual high manufacturing standards. Capacity 3 pints. Supplied complete with cord and plug. N.Z.-made.

Cat. No. TE19 .. .. .. **75/-**

## "SPEEDEE" CHROMIUM-PLATED JUG

A beautiful Chromium Plated Electric Jug. Here, beauty is more than skin deep—you will not only desire to see it set amongst your finest china, but you will become enamoured of its swift, efficient service more and more with every using. 3 Pint—Cat. No. TE35 **75/-** ea.

**ENGLAND'S LATEST!**
**The Revolutionary**
**MODEL MOTOR**
**See Page 21.**

## "SPEEDEE" ENAMEL 3-PINT ELECTRIC JUG

This pioneer in the unbreakable jug field is still the most popular jug on the market. Fast-boiling — economical — unbreakable, this "Speedee" Jug is great value for a household boiling utensil. Each jug is complete with six feet Asbestos Flex and Appliance Plug. Current consumption 1,500 watts. Brown.

Cat. No. TE33 .. .. .. **45/-**

## "NEECO" JUGS

These Porcelain Jugs are well known for their high quality. Made of strong porcelain and attractively glazed. Hold 3 pints. Supplied complete with Plug and Cord. Note new reduced price.

Cat. No. TE16 .. .. .. **29/6** each

## "TUDOR" CHROME JUGS

QUICK — ECONOMICAL — SAFE!

A modern, aristocratic design of Chromium Jug that will be the envy of all your friends. Made in heavy gauge spun copper, plated in gleaming chromium. Wooden handle. Capacity 3 pints; size, diameter 6½in., height 5½in.. Boils in approximately 3 minutes. TWELVE MONTHS' GUARANTEE. Complete with 5ft. flex and plug.

Cat. No. TE17 .. .. **£3/15/-**

## WIRELESS JUGS

These Jugs are so-called because they use a plate type (electrode) element in place of the usual wire type. It is impossible to burn out this type of element. Made of porcelain, brown glazed. Bakelite lid. 4-pint capacity.

Cat. No. TE21 .. .. .. **45/-**

*Boils 1 pint in about 2½ minutes*

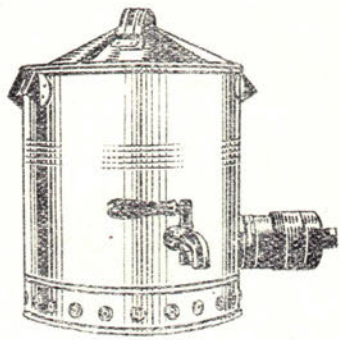
## "SPEEDEE" IMMERSION HEATERS

A real boon to the housewife. Fast, safe, dependable and economical. Can be used in any class of vessel containing water — either glass, porcelain, aluminium or other metals.

Length, 10in. Rating 1000 watts. Cat. No. TE28 .. .. .. **12/6** ea.

Complete with 3ft. Flex.

## ELECTRIC URNS



Highly polished Nickel-plated Electric Urns, for use in factories, schools, restaurants, hotels, boarding houses, social clubs, etc.
Fast Boiling. Operate from standard hotpoint.
Prices are quoted without flexible lead. Add 2/- per yard for length of flex required.

### "SPEEDEE" URNS

Cat. No. TE2039—1 gallon, 1500 watts .. .. **£5/16/6**

Cat. No. TE2040—2 gallon, 2000 watts .. .. **£8/6/6**

Cat. No. TE2041—3 gallon, 2000 watts .. .. **£8/14/-**

Cat. No. TE2042—4 gallon, 2000 watts .. .. **£9/15/-**

Cat. No. TE2043 — "Speedee" Replacement Elements. 2000 watts. **29/3**

Cat. No. TE2044 — "Speedee" Replacement Elements, 1500 watts. **27/3**

## VIBRO-TOOLS

Engrave your name . . . etch letters or designs . . . place permanent identification marks on anything with this unique hand tool.

Carves wood and linoleum,. cuts. cardboard and balsa, tools leather. Just plug in on any 230 volt AC line.

No home shop is complete without a Burgess Vibro-Tool.

DE LUXE KIT Vibro-Tool, complete with 22 attachments in handsome polished wood chest.
Cat. No. TU400 .. .. **157/6**

STANDARD TOOL. Vibro-Tool with engraving needle only.
Cat. No. TU401 .. .. **65/-**

## AEROPLANE LAMP

Black wood base 6in. diam. Glass Ball 6in. diam. Plane mounted on chrome support. Supplied complete with 9ft. flexible cord. A novel decorative lamp.

Cat. No. TF903 .. .. **67/6** each

## BACK NUMBERS OF THE "RADIOGRAM"

32-Page Radio and Electrical Magazine.

BUNDLES OF 12 ASSORTED NUMBERS.

**1/6** Bundle

## COIL KITS

We have available a small quantity of Coil Kits for Broadcast Receivers.

These are comprised of:
2 Gang Condenser,
Aerial Coil,
Oscillator Coil and R.F. Coil (all in Cans)
2 Colour Dial complete with Escutcheon.

All matched at 385 mmfd. and offered as a complete Kit at the SPECIAL PRICE:

Catalogue No. TX303 .. .. **30/-**

(Only a small quantity available)

## RADIO PANEL LAMPS

TL300—6 volt, with S/C large bayonet base for Columbus and similar sets— 1/3 each

RADIO PANEL LAMPS. Tubular Type, screw base.

Cat. No. TL119—2 volt, .05 amp. (special low consumption for battery set) .. 1/3 each
Cat. No. TL120—2.5 volt 1/3 each
Cat. No. TL121—3.8 volt 1/3 each
Cat. No. TL122—6 volt 1/3 each
Cat. No. TL124—
6 volt, screw base, round bulb .. 1/3 each

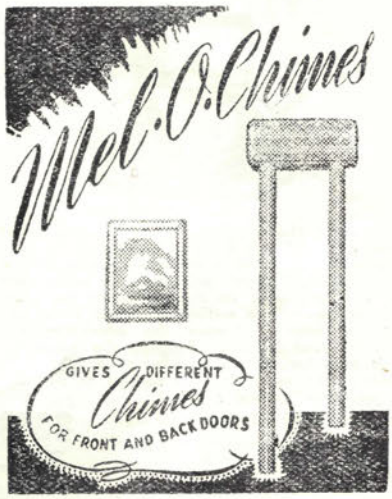
Cat. No. TL123—
6 volt, with small Bayonet base .. 1/3 each
Cat. No. TL118—
2 volt Battery Set type with small bayonet base .. 1/3 each

## "SYLVANIA" FLUORESCENT DECORATIVE LAMPS

Eight small coloured FLuorescent Lamps, fitted to lead of flex 12ft. long. Just the thing for Christmas trees, window displays, hall displays and similar. Use a string along with your Royal Visit decorations. Lamps light up, Green, Yellow, Red and Blue. Connector provided for adding further strings, i.e., linking up two strings to give 16 light display and so on. Operate from light socket or power point; 230 volts. American made.

Cat. No. TF930 .. **49/11** complete

## THE LATEST IN DOOR-CALLS!




Instead of the clacker of a door knocker or the clang of a bell the "MELOCHIME" Door Call gives a mellow two-tone chime.

Operating through a transformer from the ordinary light socket or point the "MELOCHIME" is used in conjunction with two bell pushes, one for the front and one for the back door. The unit chimes two notes for the front door and one for the back. Instructions supplied with each unit.

Cat. No. TEG325 .. **£4/19/9**
(With Transformer)

## MAGNETS

Strong Magnets removed from old meters. Useful in every workshop, office, etc., for picking up nails, screws, pins, etc. Every youngster will find dozens of other uses.

Cat. No. TU4 .. .. .. **6**D. each

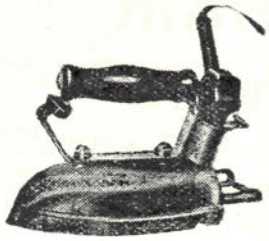
## "ARVIN" SHAVERS
### Smooth to Touch!

A smooth, clean shave, without soap and water, in four minutes with an English "Arvin Shernal" Twin Head Shaver. Uses the latest twin cutters. 240 volts. Complete with flexible cord.
Cat. No. TE279 .. .. **£6/3/6**

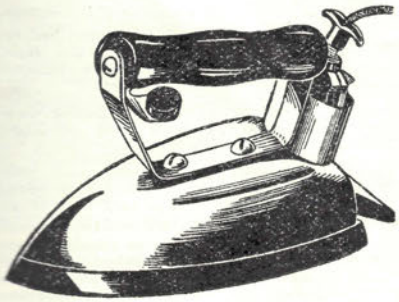
# 30/- *English Irons* 30/-

KENSUN 5lb. BRITISH-MADE IRONS, complete with 6ft. best Cord and Appliance Plug. REDUCED FROM 42/- BECAUSE OF A FEW RUST SPOTS. This small damage in no way affects the efficiency of the iron but it saves you 12/-. Cat. No. TE718—

WERE 42/-; NOW **30/-**

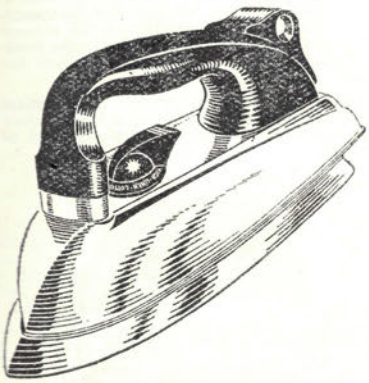


## "SPEEDEE" GEM



Gleaming white tableware immaculately smooth, linen crisp clothes without a wrinkle, reward the housewife who chooses the "Gem." Easier to use, too, because of its chromium-plated mirror surface. Perfect balance makes ironing easy. Rapid heating does the work better and quicker. Cat. No. TE714— .. **50/-**
Complete with 5ft. flex.

## MORPHY RICHARDS AUTOMATIC IRON



Make ironing a pleasure with one of these DE LUXE AUTOMATIC ELECTRIC IRONS. Thermostatically controlled, this Iron can be set to the correct temperature for the material you are ironing. Five different settings: for Rayon, Silk, Cotton, etc. Beautifully moulded Plastic handle with Indicator Light insetted. Highly polished chromium base. Complete with 5ft. flex.

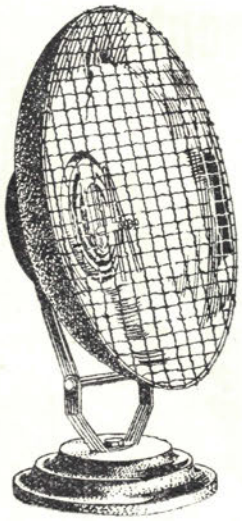
Cat. No. TE724— With Chrome Body .. .. **£4/12/6**
Cat. No. TE725— With Pastel coloured body .. **£4/4/6**

## MAJESTIC LAUNDRY IRONS

10½lb. Heavy Irons for Tailors, Laundries, etc. Suppplied Complete with cord.

Cat. No. TE719 .. .. **70/-** each

## "ERGON" ULTRA VIOLET HEALTH LAMPS

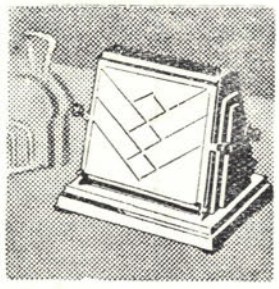


The "Ergon" is a Carbon Arc Ultra Violet Lamp combined with Infra Red. The Carbons, which are prepared from certain chemicals, emit Ultra Violet Rays. The Spiral emits simultaneously Infra Red. Ultra Violet Rays are invaluable in the treatment of various diseases and ills, but before buying for this purpose— CONSULT YOUR DOCTOR!

Daily sunbathes with this Lamp will not only keep you fit and raise your resistance to winter cold, but will also give you an enviable and healthy Suntan. Own your own sunshine—own an ERGON HEALTH LAMP.

Cat. No. TE89 .. .. **£10/18/4**

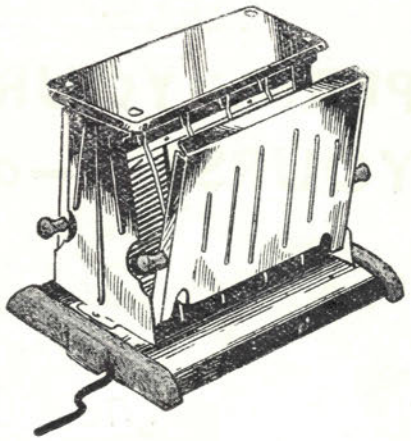
## "NEECO" CHEVRON TOASTER



Two-slice Toaster of latest design and finished in gleaming chrome. Crisp brown toast is yours with a flip of the holder. Guaranteed 12 months. Supplied complete with cord.

Cat. No. TE781 .. .. **52/6** each

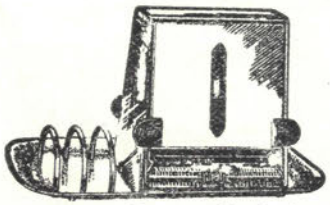
## "SPEEDEE" TABLE TOASTER



A beautifully finished two-slice Toaster of the turnover type, constructed of heavy-gauge metal, nickel-plated, and provided with four bakelite knobs for turning bread. Moulded plinths are provided to prevent scratching of highly polished table surfaces. Complete with six feet two-core Heater Flex.

Cat. No. TE754 .. .. **29/6**

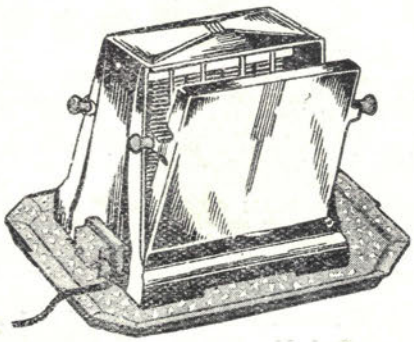
## "SPEEDEE" TIFFIN TOASTER



Two-slice Chrome Toaster, with plastic tray and toast rack. Complete with cord.

Cat. No. TE763 .. .. .. **52/6**

## "SPEEDEE" HOSTESS TOASTER



Another attractive and practical Speedee Toaster. Its moulded base in the form of a tray is designed to prevent the crumbs which collect on the table when using other toasters. The body of the Toaster, beautifully streamlined and chromium plated, conserves all the heat and supplies crisp golden brown toast in a minimum of time.

Cat. No. TE755 .. .. **42/6**

**IMPORTANT!**

Owing to existing conditions prices in this catalogue are given as a guide only. All orders will be executed at the price ruling at the date of supply.

# BEAUTY AND HEALTH

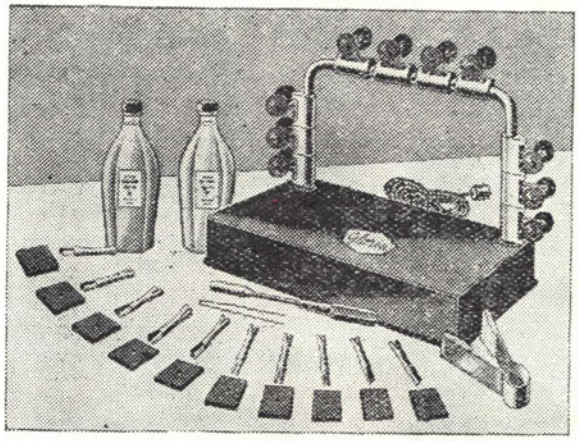
## PERM. YOUR HAIR YOURSELF—*at home!*

**Yes! Now you can cut out those tedious time-wasting hairdressing appointments!**

**All you need is—**

*The "GLORIA"*

**Home Permanent Wave Outfit**



With the "GLORIA" Outfit you will be able to PERM YOUR OWN HAIR IN YOUR OWN HOME, easily obtaining a PERM OF PROFESSIONAL QUALITY—waves and curls of lasting loveliness, with self-setting ends. The "Gloria" is ready for service any time of the day or night. The parts of the "Gloria" Outfit are extremely easy to use, and by following the instructions you will immediately be able to "perm" your own hair and also that of other members of the family, if desired!

ASSURES A PERM OF PROFESSIONAL QUALITY. We illustrate the complete outfit above. It is, in principle, the same as used in any modern Beauty Salon. No experience or training is necessary with the "GLORIA" Permanent Wave Outfit. Those who live in the country will find this outfit will soon pay for itself by the saving of time and expense of going to town for perms.

**Complete Outfit Cat. No. TE105 £6/12/6 only.**

Includes 130-watt, 230-volt Permanent Waving Machine; 10 Heater Clamps; 10 Spring Winding Rods; 10 Rubber Pads; 1 bottle Waving Solution; 1 bottle Setting Lotion; 1 Damper; 1 Winder; 1 Instruction Book. Extra Parts and Refills of Waving and Setting Solutions can be bought separately.

*Our Guarantee Protects You! SEND FOR ONE NOW!*

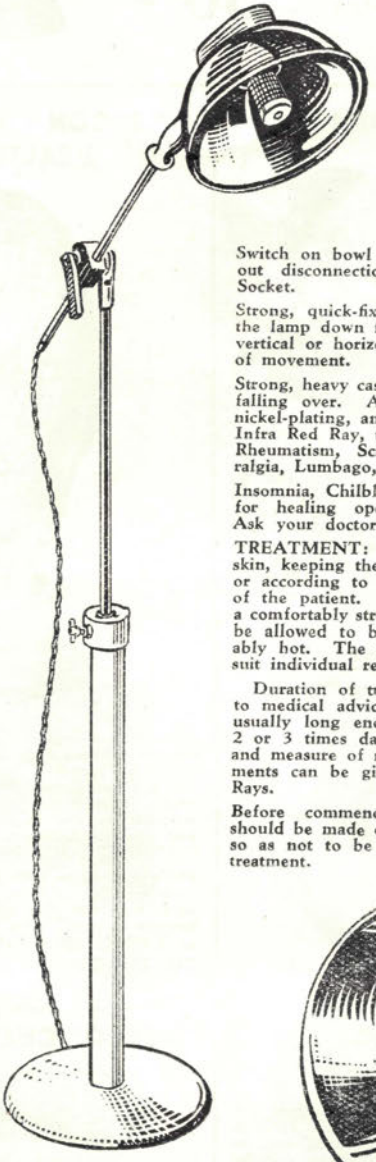
SPARES ALWAYS AVAILABLE.

### GLORIA WAVER SPARES

| | Each. |
|---|---|
| Cat. No. TE106—Heating Clamps | 5/9 |
| Cat. No. TE107—Curling Rods | 2/10 |
| Cat. No. TE108—2½oz. bottle of Waving Solution | 3/9 |
| Cat. No. TE109—10oz. bottle of Waving Solution | 10/9 |
| Cat. No. TE110—2½oz. Bottle of Setting Lotion | 2/10 |
| Cat. No. TE111—10oz. Bottle of Setting Lotion | 9/3 |
| Cat. No. TE112—Spare Dampers | 4/6 |
| Cat. No. TE113—Spare Winders | 4/4 |
| Cat. No. TE114—Rubber Pads | 5/- doz. |

## Hayman's Infra Red Medical Lamps

**As supplied to the Auckland Hospital Board and many other hospitals throughout New Zealand. These Lamps allow you to obtain exactly the same Infra Red Treatment as given in many of the leading hospitals. Specially designed for use in Hospital Massage Departments, Surgeries, Clinics, Convalescent Homes, Institutions, and in private homes.**



SPECIAL FEATURES INCORPORATED ARE:

Infra Red Radiating Element, emitting genuine Infra Red Rays, specially designed for heavy duty performance and long life; tested and proved by medical experts.

Non-luminous type Element.

Special brightly polished reflector to give the right focus of rays to location under treatment.

Switch on bowl to control the Element without disconnection of Wall Plug or Light Socket.

Strong, quick-fixing swivel joints which hold the lamp down firmly in any desired position, vertical or horizontal, with a very wide range of movement.

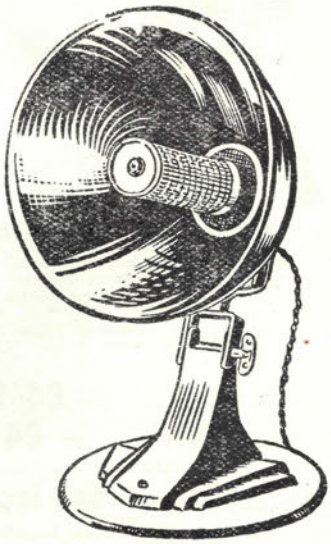
Strong, heavy cast base prevents standard from falling over. Attractively finished in bright nickel-plating, and wrinkle-finish baked enamel. Infra Red Ray, treatment is recommended for Rheumatism, Sciatica, Neuritis, Gout, Neuralgia, Lumbago, Toothache, Earache, Sprains,

Insomnia, Chilblains, Boils, Septic Sores, and for healing open wounds and lacerations. Ask your doctor.

TREATMENT: Apply the Rays to the bare skin, keeping the bowl about 18 inches away, or according to the sensitiveness of the skin of the patient. The Rays should always be a comfortably strong warmth, and should never be allowed to be so close as to be unbearably hot. The Lamp should be adjusted to suit individual requirements.

Duration of treatment should be according to medical advice, but 20 to 30 minutes is usually long enough for the first treatment, 2 or 3 times daily, according to the ailment and measure of relief received. Longer treatments can be given when accustomed to the Rays.

Before commencing treatment, the patient should be made comfortable in a bed or chair so as not to be weary during the period of treatment.



**FLOOR TYPE**
**Cat. No. TE85—**
**£10/3/6**

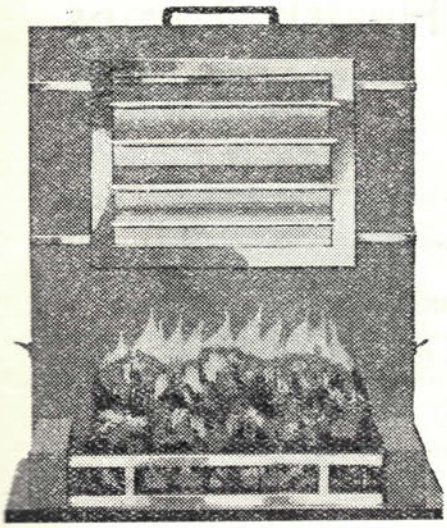
**TABLE TYPE**
**Cat. No. TE86—**
**£5/6/9**

**Supplied complete with flexible cord.**

**Spare Elements are available.**
Cat. No. TE87 .. **17/6**

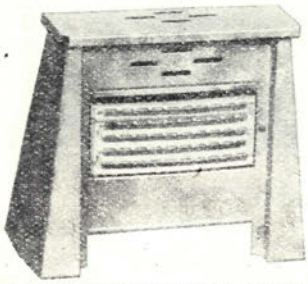
# MAKE THE HOME COSIER!

## ELECTROWAY IMITATION COAL FIRE



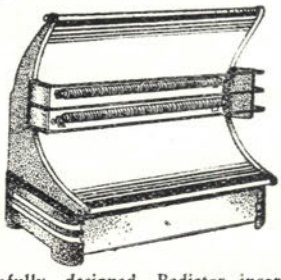
Provided with 2 super elements, each of 1000 watts, which can be operated independently by means of the high-grade English switches incorporated. Gives realistic impression of coal fire. Finished in sprayed silver with chromium-plated reflectors and trimmings. Small fan revolving inside red coals gives "smoke" effect.
Cat. No. TE850 .. .. **£14/5/-**

## " ELECTROWAY " TILE RADIATOR



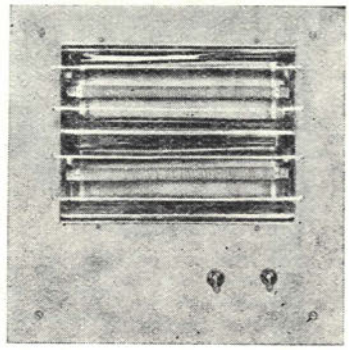
A well constructed, serviceable, Radiator that will give years of trouble-free comfort. 1000 watt Tile Element. Finished in a wide range of flecked colours, including Red, Slate, Green, Cream, etc. Complete with 4 feet flexible 3 core cord.
Cat. No. TE856 .. .. .. **45/9**

## "ST. MARTINS" RADIATOR



A gracefully designed Radiator incorporating the maximum reflector surface for greatest heat radiation. Chrome reflector and trimmings. Base crackle finished. 2000 watts. Complete with 5ft. flex.
Cat. No. TE704 .. .. **58/-**

## ELECTROWAY WALL INSET FIRE



This inset fire with its flush-fitting chromium-plated front panel adapted to accommodate an opening in standard tile slabbing, is most suitable for the modern type of building. The chromium-plated reflector and the pencil rod elements complete the handsome design, entirely obviating that "flatness" of appearance so customary with many wall heaters. The dimensions for the two types are as follows: 1kw., Overall 16in. x 5in., Back Box 16in. x 4in.; 2kw., Overall 16½in. x 16½in.; Back Box 16in. x 16in.

Cat. No. TE855—1kw. type .. .. **66/9**

Cat. No. TE858—2 kw. type .. **120/-**

The fires above are not supplied with heater flex, as they are designed for permanent building-in.

## " ULTIMATE " DE LUXE RADIATOR

Chrome reflector. 2000-watt. Fire of attractive appearance. Frame finished in black. Has two elements, each of 1000 watts, and switch so that one element can be turned off if not required. Complete with 3-wire flex.

Cat. No. TE863—Two Elements **90/6** each

Cat. No. TE864—1 Element .. **78/-** each

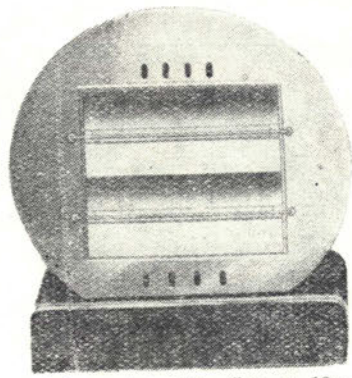
### Money Back Guarantee

Any goods that prove in any way unsuitable may be returned undamaged within seven days from receipt and your money will be refunded in full.

## ELECTROWAY, MODEL 72

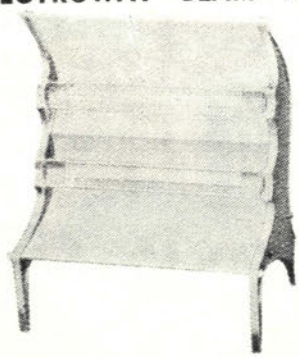
A superior 2 kw. fire with large welded steel frame and 15 amp. switch.
Cat. No. TE853 .. .. **77/6**

## ELECTROWAY "PLINTH" FIRE, 2000 watts.



Chromed brass disc, 15in. diam. x 18g., on enamelled steel plinth, with chromed relief. With two reflector elements as illustrated. Switch and two yards 3-core flexible fitted to each fire.
Cat. No. TE852 .. .. **£6/4/6**

## ELECTROWAY "BEAM" FIRE

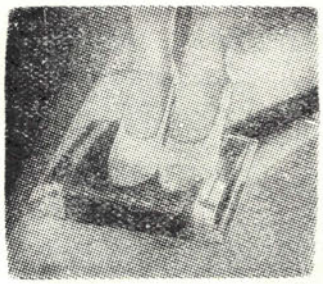


Concentrates the radiation in one direction. High radiant efficiency. 2 kw., with switch controlling one bar.
Cat, No. TE854 .. .. **112/-**

## PERMIT

A permit to purchase a Radiator is necessary for some provinces in New Zealand. Consult your local power board before ordering.

## WHO'S GOT COLD FEET?



Warm comfort cold days with a "Hayman" ELECTRIC FOOT WARMER. Gives warmth where it is wanted! Cold feet banished. Increases efficiency in Offices and Factories. Gives comfort in the Homes and to aged or infirm. Will dry wet shoes without damage to sole.

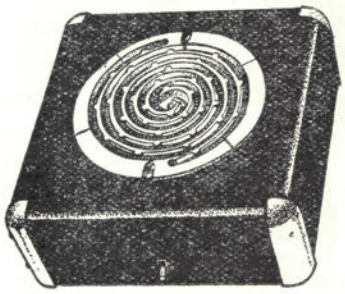
POWER SAVER — OPERATES FOR 20 HOURS ON ONE UNIT of Electricity—uses less current than the average Lamp.

TWELVE MONTHS' GUARANTEE!

NO PERMIT REQUIRED.

Cat. No. TE291 .. .. **45/-** each

## "SPEEDEE" TABLE STOVES

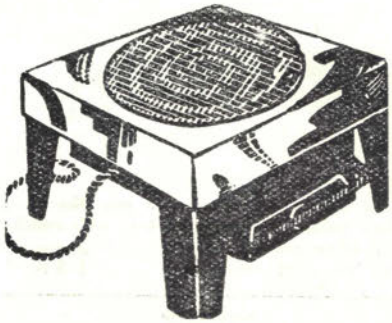


This compact, sturdy, reliable Table Stove has countless uses in every home. Living up to the motto that "'Speedee' appliances are definitely faster," it has its most useful moments when making the bowl of hot soup for cold, winter afternoons or when making that "last cup" before bedtime.

Cat. No. TE148—2 heat .. .. **37/6**

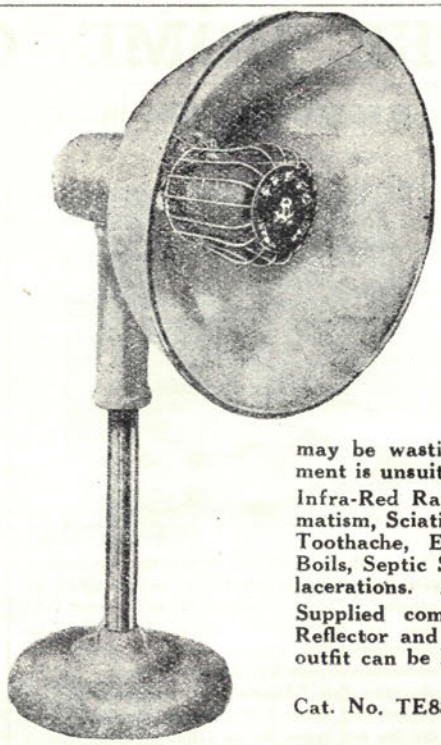
Cat. No. TE147—Single heat .. **27/6**

## "AKRAD" HOTPLATE



Useful open type Hotplate. Size overall, 8¼ x 8¼ x 5in. high. Diam. of element, 6¼in. 800 watts. 2 heat.

Cat. No. TE146 .. .. .. **45/-**



# Infra-Red Health Lamps

### NORWOOD INFRA-RED HEALTH LAMP

"CONSULT YOUR DOCTOR!"

**Whatever your complaint, we suggest you consult your doctor before commencing Infra-Red treatment. While Infra-Red rays are perfectly safe, you may be wasting valuable time if this type of treatment is unsuitable for your particular complaint.**

**Infra-Red Ray treatment is recommended for Rheumatism, Sciatica, Neuritis, Gout, Neuralgia, Lumbago, Toothache, Earache, Sprains, Insomnia, Chilblains, Boils, Septic Sores, and for healing open wounds and lacerations. Ask your doctor.**

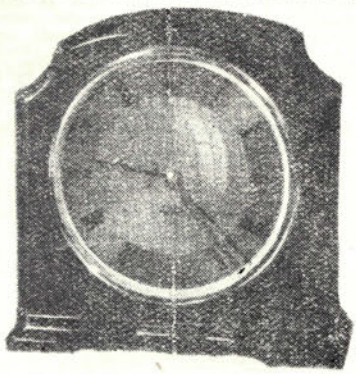
**Supplied complete with table stand as illustrated. Reflector and handle is removable from base so that outfit can be held in hand.**

Cat. No. TE88 .. .. **£5/8/6** EACH

## "SMITH" ELECTRIC CLOCKS

MANUFACTURED BY ENGLAND'S LEADING CLOCK DESIGNERS.

The illustrations below show two of the many Electric Clocks produced by Smith's, England. The designs are very attractive and the workmanship the best.



### The Ramsay.

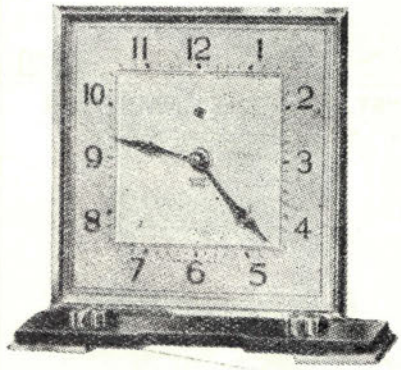
Available in either a Pastel Green or Primrose Plastic case with gilt trimmings and a two-tone dial. Height, 5½in., width 5⅝in., Depth 2¾in.

Cat. No. TE883 .. .. **£3/17/-**

## ENGLISH HAIR DRIERS

These Hair Driers are moulded in beautifully finished bakelite. They are British made, the fan being driven by a solidly constructed and trouble-free motor. A heating element is incorporated and a switch provided so that hot or cold air can be obtained at will. As a quick and efficient means of drying the hair, these electrical hair driers are ideal.

Cat. No. TE890 .. .. **£6/18/6**




### The Campden.

Chromium-plated Style Clock, with a moulded black base. Cream dial with raised silver zone. Arabic figures. Height 6⅛in., width 7¼in., depth 3in.

Cat. No. TE884 .. .. **£6/9/6**

# Poker Sets

## THE "HOMECRAFT" POKER WORK SET

For use from standard 230-volt light socket or power point. Tip gets very hot and by changing leads on to different terminals heat can be varied for different classes of work. Metal box measures 3¾in. x 3in. x 4¼in.

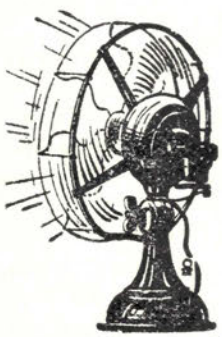
The introduction of the Homecraft Poker Machine will undoubtedly advance this art in New Zealand. By using this machine the artist can concentrate all his or her attention on the pokerwork itself, as, when the heat is regulated to the required strength it automatically remains at the same heat. This enables the work to be executed at great speed. Homecraft Machines are perfectly safe in use.

Cat. No. TE90 ..... **70/-**

Cat. No. TE91—Spare Tips for above .. .. .. .. **4D.** each

Cat. No. TE92—Spare Handles (complete with flex) .. **12/-** each

## B. & Y. FAN



British-made Fan. All metal. Chrome support. Heavy base. Fan can be adjusted to any angle. Speed regulation in base. 12in. Blades.—Cat. No. TE120 .. **£9/5/6**

## RUBBER BLADED FAN

Blades are 9in. Diameter and made of rubber. This fan is ideal when used within reach of children, etc. British made. Heavy metal Base.—Cat. No. TE119 .. **135/-** each

# The "Ensign" Battery Welder

## Save Time! Labour! Money!

Work from any 6 to 12 volt storage battery providing instant and even heat. Do your own soldering, welding, brazing, with this useful tool.

The Welder is of rugged construction. Battery leads are of heavy rubber-covered low-potential cable, giving maximum transfer of power to the welder.

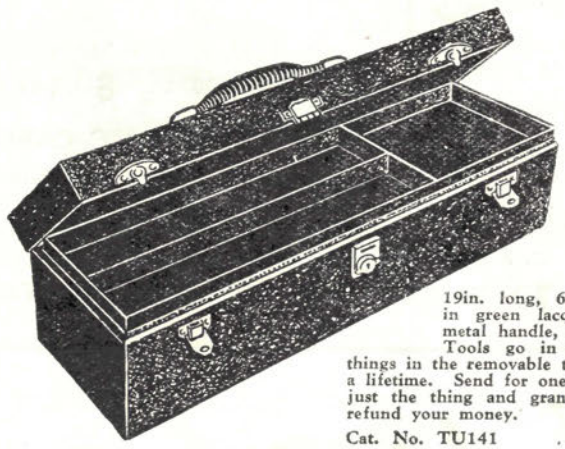
The Welder is especially applicable for auto repairs, mudguards, radiators, etc., and also light inside work—for the farm it is invaluable for mending buckets, cans, and light farm implements. Battery firms use it for lead burning; especially useful for battery repairs on the roadside. Supplied with full instructions.

Cat. No. TE8 .. .. **39/6** complete

### Spares:

Cat. No. TE9—Carbon Electrodes .. 2/6
Cat. No. TE13—Brass Electrodes .. 6d.
Cat. No. TE14—Steel Electrodes .. 6d.
Cat. No. TE15—Packets of Flux .. 6d.

## SAVE TIME AND TEMPER! Get one of these



# ALL-STEEL Radio Tool Boxes

19in. long, 6in. wide, 6½in. deep. Finished in green lacquer, solidly constructed, stout metal handle, and with a place for everything. Tools go in the bottom, and all the small things in the removable tray. It's a dandy job—good for a lifetime. Send for one today, and if you don't think it just the thing and grand value—return it, and we will refund your money.

Cat. No. TU141 .. .. .. .. **40/-**

# ELECTROTOR!

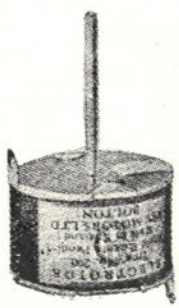
## The little chap with the big heart!

The illustrations give the actual size of the AMAZING, WORLD STARTLING, LITTLE ELECTROTOR!

ENGLAND'S LATEST IN MODEL MOTOR DESIGN.

Measures only ⅞in. in diameter and 9/16in. in width.

This ELECTROTOR is universally popular for model driving of all descriptions. Use it in your Meccano Units, Aeroplanes, Motor-Boats, and all other mechanised models. Requires only 3 to 4½ volts to drive it, and consumes less than a Torch Bulb—operates efficiently on 2 Penlite Cells. AND LOOK AT THE WEIGHT—¾ oz.! You won't believe it till you see it and use it.



The ELECTROTOR first came into prominence in the public eye when used throughout the tests conducted by the "Daily Mail" in England of the Radio Controlled Power Boat.

IT IS NOT ONLY STARTLING—BUT IT IS PROVEN, and the Price for all this—Look!

Cat. No. TM695 .. .. .. .. **7/-**

Trade enquiries invited.

# Motor Car Cable Special!

**LARGE QUANTITY, PURCHASED AT A SPECIAL PRICE, ENABLES US TO MAKE THIS OFFER. GENUINE IMPORTED, WITH HEAVY RUBBER INSULATION. COVERED OVERALL WITH A GLAZED OIL AND WATERPROOF BRAID.**

## SINGLE OIL PROOF CABLE

9/012 (No. 18)—Single Flexible Oil Proof Cable. Approx. 4 M.M.
Cat. No. TW300 .. **5**D. Yard

16/012 (No. 16)—Single Flexible Oil Proof Cable. Approx. 5 M.M.
Cat. No. TW301 .. **7**D. Yard

## 7 M.M. HIGH TENSION CABLE

Rubber - covered Ignition Cable, multiple covers of high-grade Rubber. 7 M.M.
Cat. No. TW303 .. **6**D. per ft.

### TWIN TWISTED P.V.C. CABLE

Twin twisted Yellow and Black flexible Cable, with latest P.V.C. Insulation. Ideal for extension lights, motor-car wiring, etc, etc.
Cat. No. TW87A .. **6**D. Yard

## TWIN OIL PROOF CABLE

9/012 (No. 18)—Twin Flexible Oil Proof Cable.
Cat. No. TW311 .. **8**D. Yard

16/012 (No. 16)—Twin Flexible Oil Proof Cable.
Cat. No. TW312 .. **9**D. Yard

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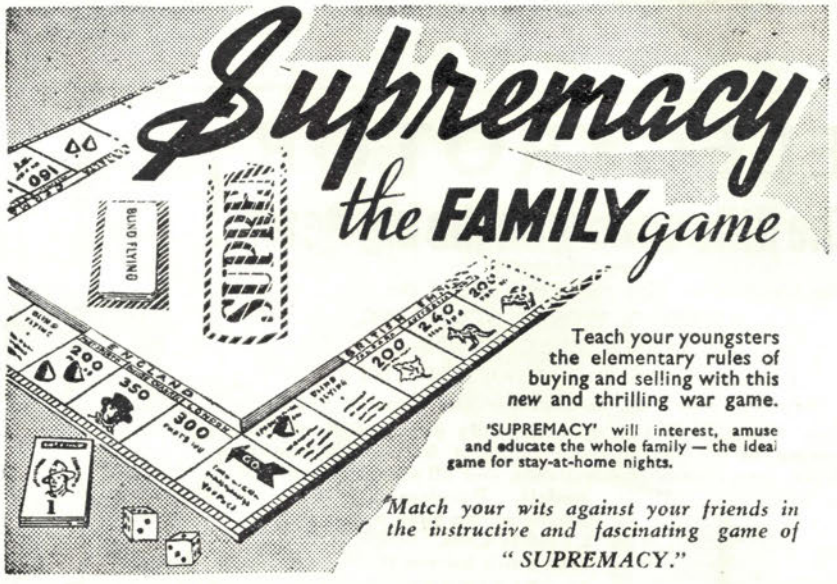

Supremacy
the FAMILY game
BLIND FLYING
ENGLAND
300
350
300
400
400
500
500
GO
Teach your youngsters the elementary rules of buying and selling with this new and thrilling war game.
'SUPREMACY' will interest, amuse and educate the whole family — the ideal game for stay-at-home nights.
Match your wits against your friends in the instructive and fascinating game of "SUPREMACY."

Cat. No. TU500 .. .. .. .. **19/6** Post Free.

**Recognised Dealers who have not already obtained supplies should write at once for our terms.**

There's no "luck of the game" about it — the most skilful player wins. It's great fun and excitement capturing Tanks, Aeroplanes, Air Bases, Forts, Infantry Divisions; winning Naval Battles, controlling the English Channel.

Could you have held the Maginot Line?

It's all in "SUPREMACY," the game that caught on so rapidly throughout New Zealand.

Your name mightn't be Montgomery or Eisenhower but you too can organise and control masses of military material.

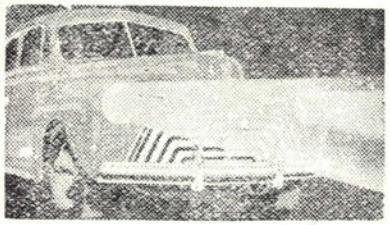
Anyone can learn within a few minutes. From 2 to 7 players.

Evenings filled with thrills and excitement for your family and friends. Complete with all equipment and printed instructions

**Send for your "SUPREMACY" set to-day. The game that no one can resist.**

**Obtainable direct from: THE LAMPHOUSE, or from any leading Bookseller.**

# MOTOR CAR LAMPS AND BATTERIES



We can supply Lamps for any type of car, including types with special caps, and if you are in doubt about the type to order, send a sample.

### 6/8 VOLT SINGLE CONTACT SINGLE FILAMENT LAMPS

| Cat. No. | Candle Power. | Equivalent Wattage. | Location. | Price. |
|---|---|---|---|---|
| TL300 ... | 6 | 5 | Tail | 1/4 |
| TL302 ... | 15 | 12 | Stop | 2/3 |
| TL303 ... | 21 | 20 | Head | 2/3 |
| TL304 ... | 32 | 25 | Head | 2/3 |
| TL305 ... | 50 | 35 | Head | 2/3 |

### 6/8 VOLT DOUBLE CONTACT SINGLE FILAMENT LAMPS

| Cat. No. | Candle Power. | Equivalent Wattage. | Location. | Price. |
|---|---|---|---|---|
| TL306 ... | 6 | 5 | Tail | 1/4 |
| TL308 ... | 15 | 12 | Stop | 2/3 |
| TL309 ... | 21 | 20 | Head | 2/3 |
| TL310 ... | 32 | 25 | Head | 2/3 |
| TL311 ... | 50 | 35 | Head | 2/3 |

### 12/16 VOLT SINGLE FILAMENT SINGLE CONTACT LAMPS.

| Cat. No. | Candle Power. | Equivalent Wattage. | Location. | Price. |
|---|---|---|---|---|
| TL312 ... | 6 | 5 | Tail | 1/4 |
| TL314 ... | 15 | 12 | Stop | 2/3 |
| TL315 ... | 21 | 20 | Head | 2/3 |
| TL316 ... | 32 | 25 | Head | 2/3 |
| TL317 ... | 50 | 35 | Head | 2/3 |

### 12/16 VOLT SINGLE FILAMENT DOUBLE CONTACT LAMPS.

| Cat. No. | Candle Power. | Equivalent Wattage. | Location. | Price. |
|---|---|---|---|---|
| TL313A .. | 6 | 5 | Tail | 1/4 |
| TL315A .. | 15 | 12 | Stop | 2/3 |
| TL316A .. | 21 | 20 | Head | 2/3 |
| TL317A . | 32 | 25 | Head | 2/3 |
| TL318 ... | 50 | 35 | Head | 2/3 |

### 6/8 VOLT DOUBLE FILAMENT HEAD LAMPS WITH STANDARD DOUBLE CONTACT CAP.

| Cat. No. | Candle Power. | Equivalent Wattage. | Price. |
|---|---|---|---|
| TL319 ..... | 21/3 (Ford) | 20/3 | 2/8 |
| TL320 ..... | 32/6 | 25/5 | 2/8 |
| TL321 ..... | 21/21 | 20/20 | 3/5 |
| TL322 ..... | 32/32 | 25/25 | 3/5 |
| TL323 ..... | 50/50 | 35/35 | 3/5 |

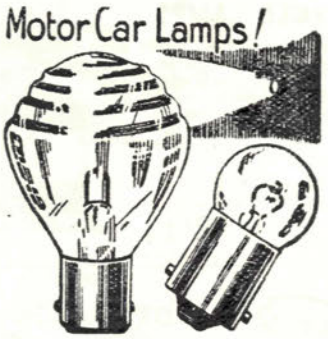
### 12/16 VOLT DOUBLE FILAMENT HEAD LAMP WITH STANDARD DOUBLE CONTACT CAP.

| Cat. No. | Candle Power. | Equivalent Wattage. | Price. |
|---|---|---|---|
| TL327 ..... | 21/3 | 20/3 | 2/8 |
| TL328 ..... | 32/6 | 25/5 | 2/8 |
| TL329 ..... | 21/21 | 20/20 | 3/5 |
| TL330 ..... | 32/32 | 25/25 | 3/5 |
| TL331 ..... | 50/50 | 35/35 | 3/5 |

### 6/8 VOLT LAMPS WITH SPECIAL CAPS.

| Cat. No. | Location. | Wattage. | Cap. | Price. |
|---|---|---|---|---|
| TL350 .. | Head | 25/25 Prefocus | 836 | 4/1 |
| TL351 .. | Head | 35/35 Prefocus | 836 | 4/8 |

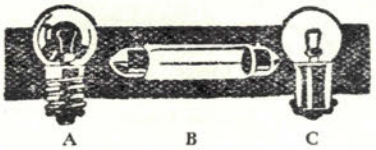
For Most American Cars.




### 12/16 VOLT LAMPS WITH SPECIAL CAPS.

| Cat. No. | Location. | Wattage. | Cap. | Price. |
|---|---|---|---|---|
| TL373 .. | Head | 25/25 Prefocus | 836 | 4/1 |
| TL374 .. | Head | 35/35 Prefocus | 836 | 4/8 |

## SPECIAL INTERIOR LAMPS, Etc.



A B C

A—Ignition Indicator Min. Screw.
B—Trafficator.
C—Ignition Indicator Min. Bayonet Cap.

### 6/8 Volts

| Cat. No. Location. | Size, M.M. | Cap. | Price. |
|---|---|---|---|
| TL335—Trafficator .. | 38 x 7½ | B | 1/11 |
| TL336—Festoon .. | 43 x 15 | B | 1/11 |
| TL337—Festoon .. | 32 x 15 | B | 1/11 |
| TL338—Ignition Indicator | — | A | 1/3 |
| TL339—Ignition Indicator | — | B | 1/3 |
| TL340—Dash Board Dial | — | C | 1/3 |

### 12/16 Volts

| Cap. No. Location. | Size, M.M. | Cap. | Price. |
|---|---|---|---|
| TL341—Trafficator .. | 38 x 7½ | B | 1/11 |
| TL342—Festoon .. | 43 x 15 | B | 1/11 |
| TL343—Festoon .. | 32 x 15 | B | 1/11 |
| TL344—Ignition Indicator | — | A | 1/3 |
| TL345—Ignition Indicator | — | C | 1/3 |
| TL346—Dash Board Dial | — | C | 1/3 |

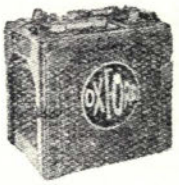
## MOTOR-CAR FUSES

Cat. No. TS167— 5 amp.
Cat. No. TS168—10 amp.
Cat. No. TS169—20 amp.
Cat. No. TS170—15 amp.

**5D.** each

"The Lamphouse" 7 Days Money Back Guarantee Safeguards your every purchase!

## OXFORD MOTOR CAR BATTERIES

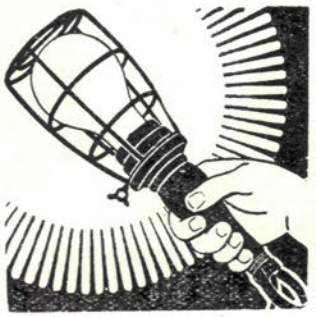


Eighteen months' unconditional guarantee. Solidly built H.D. leak-proof Batteries. Thick plates, built in New Zealand for N.Z. conditions.

*CAREFULLY SEALED CELLS*
*THICK PLATES*
*LONG LIFE GUARANTEED*

| Cat. No. | Price. |
|---|---|
| TA40—6-volt, 9-plate. Width 7in. x length 7in. x height 9in. .. .. .. | £4/7/6 |
| TA41—6-volt, 11-plate. English. 7in x 7½in. x 9in. .. | £5/1/9 |
| TA42—6-volt, 11-plate. Squat. 7in x 7½in. x 7½in. .. | £4/10/6 |
| TA43—6-volt, 13-plate. 7in. x 9¼in. x 9in. .. .. | £5/13/- |
| TA44—6-volt, 13-plate. Squat. 7in. x 9¼in x 7½in. .. | £5/5/- |
| TA45—6-volt, 15-plate. 7in. x 10⅜in. x 9in. .. .. | £6/16/- |
| TA46—6-volt, 15-plate. Squat. 7in. x 10⅜in. x 7½in. .. | £5/19/- |
| TA47—6-volt, 17-plate, 7in. x 11½in. x 9in. .. .. | £8/3/- |
| TA48—6-volt, 17-plate. Squat. 7in. x 11½in. x 7½in. .. | £7/8/6 |
| TA49—6-volt, 19-plate, 7in. x 12⅝in. x 9in. .. .. | £9/6/- |
| TA50—12-volt. 7-plate. 7in. x 11½in. x 9in. .. .. | £7/11/- |
| TA51—12-volt, 9-plate, 7in. x 12⅝in. x 9in. .. .. | £8/5/- |
| TA52—12-volt, 11 plate, 7in. x 14⅜in. x 9in. .. .. | £10/6/6 |
| TA53—12-volt, 11-plate. Squat. 7in. x 14⅜in. x 7½in. .. | £9/7/9 |
| TA54—6-volt, 7-plate. Motor Cycle, 3½in. x 4½in x 6½in. | £2/5/3 |

## HANDY! SAFE!



The ideal INSPECTION LAMP for workshops, garages, factories, etc. Take the light where you want it most. Wood handle, strong wire protective frame. Fitted with bakelite shockproof lampholder.

Cat. No. TE95 .. .. .. **21/6**

# Torches - Batteries - Cycle Lamps

## TORCH BARGAINS

**These Torches give an excellent light, but because the finish is not as good as we like, prices have been drastically reduced.**

Standard size, colour sprayed metal cases, 6in. x 1½in. diam. Broad beam; non-focussing. Supplied complete with globe and batteries.

Cat. No. TT825A Reduced to **4/5** complete

## "CLIPPER" BRAND TORCHES

"DAIMON" SMALL POCKET SIZE, focussing Torch. Takes "Bijou" Single Cell. Range 100ft. Dimensions, length 4⅛in., head 1⅝in. diameter. Nickel-plated body with black end pieces. Supplied complete with battery and bulb. Ideal for pocket or handbag torch.

Cat. No. TT828 .. Reduced to **3/11**

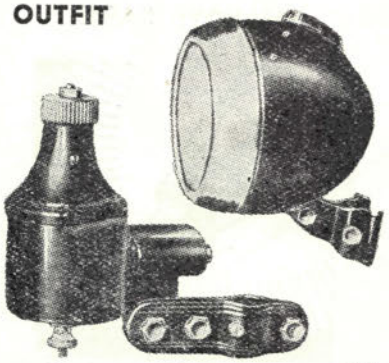
THE "MINOR" SMALL POCKET SIZE; focussing Torch. Similar to the above but taking two Eveready Baby Unicells (935). Range 200ft. Dimensions, length 5in., head 1¾in. diameter. Also ideally suited as handbag torch. Complete with globe and batteries.

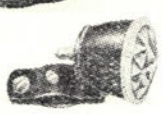
Cat. No. TT830 Reduced to **4/11** each

THE "CLIPPER" STANDARD SIZE, focussing torch. Uses two Eveready Standard Unicells (950). Dimensions, height 6¾in., head 2¼in. diameter. Nickel-plated body with black neck and base. Head nickelled. Features special hand grip carrying clip. Range 350ft. Complete with globe and batteries.

Cat. No. TT831 .. Reduced to **5/11**

## THE "STARLITE" DYNAMO OUTFIT

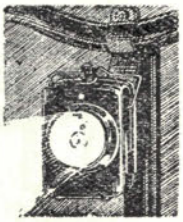




A well-designed, black sprayed 6-volt Dynamo Set. 3in. diameter, highly polished Reflector to give maximum efficiency. Incorporates space and switching arrangement to convert headlamp for stationery battery operation. Complete with Ruby Tail Lamp, connecting leads, globe and fixing brackets. A first rate English product.

Cat. No. TT807 .. .. **42/6** set

## CYCLE LAMPS



Metal-cased English Cycle Lamps. A well-constructed job, with a 2½in. diameter highly polished, nickel-plated reflector; case coloured black. Fixing bracket and carrying handle provided. Complete with battery and globe.

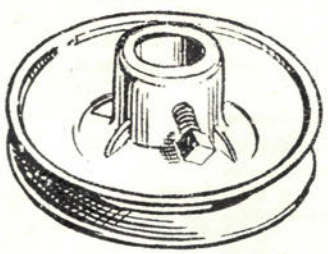
Cat. No. TT804— **8/11**

## TORCH LAMPS

**Standard Types. Best Quality.**

| | |
|---|---|
| Cat. No. TL103—4 volts .. | 11d. each |
| Cat. No. TL112—2.5 volts .. | 9d. each |
| Cat. No. TL113—Focus 3.5 volts | 9d. each |
| Cat. No. TL109—Focus 6 volts .. | 1/- each |
| Cat. No. TL99—2.5 volts, pre-Focus type (American Fixed Focus) | 1/9 each |
| Cat. No. TL1—6 volt 3 watt Cycle Dynamo Lamps .. .. | 1/7 each |
| Cat. No. TL2—6 volt 1.8 watt Cycle Dynamo Lamps .. | 1/7 each |

## MOTOR PULLEYS



Cast Aluminium Pulleys, 4in. diam. for "V" Belts.

| | |
|---|---|
| Cat. No. TM700 for ⅜in. shaft | |
| Cat. No. TM701 for ⅝in. shaft. | **7/9** each |
| Cat. No. TM702 for ¾in. shaft | |
| Cat. No. TM703—2in. diam., for in. shaft .. .. | **4/6** each |
| Cat. No. TM704 — 2in. diam. for ⅝in. shaft. .. .. | **4/6** each |

## "PIFCO" PLASTIC PENLITE TORCHES

An English made Plastic Pen Torch that will clip into a mans coat pocket or slip into a lady's handbag. Small. CONVENIENT! Supplied complete with Globe and (915) Eveready Batteries. Cases in Assorted Colours.

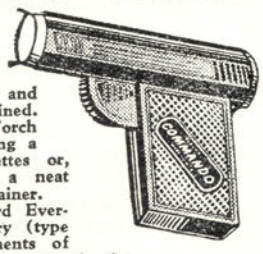
Cat. No. TT813A .. .. .. **8/3**

## "PERLUX" PLASTIC TORCH

A really streamlined Plastic Torch at a really good price; moulded from Plastic, and in several different colour tonings. Fitted with the American Fixed Pre-focus Bulb. Firm, quick-acting Switch. Length of Torch, 7in. Uses two standard size Torch Cells (Eveready 950). Complete with Batteries and Globe.

Cat. No. TT815— **10/6** each

## " COMMANDO " TORCHES



Something new in the way of a Torch. Novelty and usefulness combined. The base of the Torch slides back, leaving a space for Cigarettes or, for the Ladies, a neat Powder-puff Container. Uses the Standard Eveready Bijou Battery (type 712). Measurements of Torch, Length 4½in., Depth 4in. Available in several different colours, complete with Bulb and Battery.

Cat. No. TT816 .. .. .. **7/6**

EVEREADY
TRADE-MARK

## EVEREADY TORCH BATTERIES

***Always keep spares on hand.***

| | |
|---|---|
| Cat. No. TB31 — Standard Unit Cells (950) .. .. .. | **9**D. each |
| Cat. No. TB32—Baby Unit Cells (935) .. .. .. .. | **8½**D. each |
| Cat. No. TB33—Bijou Midget Two Cell (712) .. .. .. | **11**D. each |
| Cat. No. TB35—Flat Pocket Torch Battery (703) .. .. .. | **2/-** each |
| Cat. No. TB36—Cycle Lamp Battery (701) .. .. .. | **1/11** each |
| Cat. No. TB30—Penlite Unit Cells (915) .. .. .. .. | **9**D. each |

# Electrical Accessories

## ADAPTORS

For end of cords to fit into light socket for extensions, etc.
Cat. No. TG210 ... **1/-** each

## 2-LIGHT ADAPTORS

Two-light Bakelite Adaptors.
Cat. No. TG218
**2/11** each

## SWITCH TYPE

Enables an extension to be taken from a lamp-holder. Provided with a switch so that the centre light can be switched off, leaving the extension going.

Cat. No. TG220 .. .. **4/11** each
Cat. No. TG220A—Heavier type **6/9** each

## LAMPHOLDERS

CORDGRIP TYPE. BAKELITE—

| Cat. No. | | Each |
|---|---|---|
| TG50 | With Skirt | 1/11 |
| TG51 | Without skirt | 1/6 |
| TG52 | With switch, with skirt .. | 5/6 |
| TG53 | With switch, without skirt .. | 4/11 |

BATTEN TYPE—

| | | |
|---|---|---|
| TG54 | With skirt | 3/2 |
| TG56 | Without skirt | 2/5 |
| TG58 | With switch, without skirt .. .. .. .. | 5/6 |

ANGLE TYPE BATTEN HOLDERS—
Cat. No. TG65 .. .. .. .. 3/3

THREADED TYPE—

| | | |
|---|---|---|
| Cat. No. TG59 | ½in. Bakelite type .. | 2/7 |
| Cat. No. TG60 | ½in. metal type .. | 2/9 |
| Cat. No. TG61 | ½in. light metal .. | — |
| Cat. No. TG62 | ½in. conduit thread type | 4/6 |
| Cat. No. TG63 | ½in. bakelite type .. | 2/9 |
| Cat. No. TG64 | ½in. with switch .. | 5/9 |

E.S. HOLDERS—

| | | |
|---|---|---|
| Cat. No. TG68 | Batten type .. .. | 3/3 |
| Cat. No. TG69 | Cordgrip type .. | 3/– |
| Cat. No. TG71 | ½in. Bakelite .. | 2/10 |
| Cat. No. TG70 | Goliath screw type .. | 5/6 |

## WALL PLUG CAPS

each
2 Pin "Tee" TG85 .. **9**D.
2 Pin Parallel TG84 **10**D.
Top Entry 3-pin Cap Cat. No. TG90 .. **9**D.
Bakelite 3-pin Plug Tops, with Rubber Caps—Cat. No. TG99— .. **2/-**
Completely Rubber Enclosed 3-pin Plug Top,—Cat. No. TG98 **3/6**

## WALL PLUGS AND BASES

Cat. No. TG99/96 — Partly enclosed Rubber 3-pin Plug Top and 10/15 amp. 3-pin wall base .. .. **3/8**

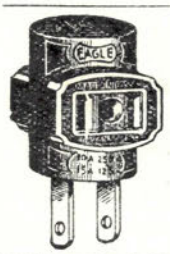
Cat. No. TG85/86 — Top entry Tee Pin Plug Top and 10/15 amp tee pin wall base .. .. **2/5** each

## WALL BASES

TITEGRIP 10/15 amp 3-pin PLUG BASES.
Cat. No. TG96 .. .. .. **1/8** each

TITEGRIP "TEE" 2-pin PLUG BASES.
Cat. No. TG86 .. .. .. **1/8** each

## PLUG CUBE




Triple Plug Cube with parallel pins. Enables 3 separate leads to be taken from one point.

Cat. No. TG102— **10**D. each

## APPLIANCE PLUGS

Fit practically all types irons, toasters, jugs and other electrical appliances.
Cat. No. TG112 **1/4** ea.

Type with earth strip (for 3-wire flex).
Cat. No. TG113 **2/6** each

## ENGLISH APPLIANCE PLUGS

FITS ALL APPLIANCES. BEST ENGLISH QUALITY.

Unearthed Type—
Cat. No. TG114 .. .. .. **2/4**

Earthed Type—
Cat. No. TG115 .. .. .. **2/7**

## HEAVY DUTY ENGLISH APPLIANCE PLUGS

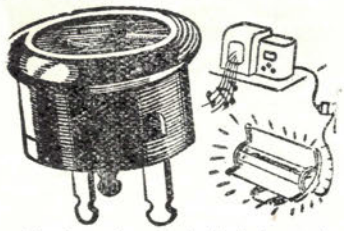
A robust, well-made English Appliance Plug, for Kettles, Toasters, Jugs, Vacuum Cleaners, etc. Fitted with strong Earthing Clip.
Cat. No. TG108 .. .. .. **4/6**

## SWITCH APPLIANCE PLUGS

Used in many of the leading vacuum cleaners, such as the "KNIGHT." Push bar switch allows current to be turned off at will.

Cat. No. TG109— **6/-** each

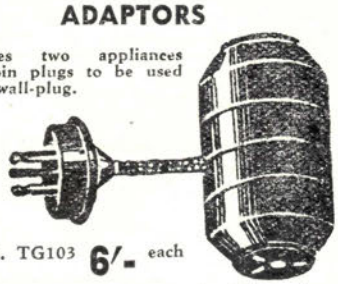
## PLUGS, DOUBLE THREE-PIN



A useful plug where it is desired to take two leads from one three-pin socket. The plug illustrated is fitted to the appliance or radio cord. A standard 3-pin plug cap can then be inserted into the top of it.
Cat. No. TG100 .. .. .. **2/-**

## LAMPHOUSE 2-WAY ADAPTORS

Enables two appliances with 3-pin plugs to be used from a wall-plug.



Cat. No. TG103 **6/-** each

Similar to above but for two pin (Tee) plugs.
Cat. No. TG104 .. .. .. **6/-**

## CONNECTORS FOR A.C. MAINS

This two-piece Connector gets over the difficulty of joining two power leads, etc. Made of best bakelite, they are strong and easy to pull apart.
Cat. No. TG18—Complete .. .. **3/-**

## CORD CONNECTORS (3-Wire)

Cord Connectors for joining three-wire cord. Moulded in bakelite. Titegrip. N.Z.-made.
Cat. No. TG25/90—Complete **2/9** each
Cat. No. TG25—Body only .. **2/-** each
Cat. No. TG90—Plug Top .. **9**D. each

## INDUSTRIAL CONNECTORS

Consisting of all-rubber three-pin Plug and rubber-covered Connector body.
Cat. No. TG26 .. .. .. **7/6**

## CONVERSION ADAPTORS

These Conversion Adaptors will be found useful to the general public, besides appliance salesmen, etc. They enable a radio set with a three-pin plug to be used from a two-pin socket, etc.

| Cat. No. | Fits into. | Takes. | Price. |
|---|---|---|---|
| TG500 | 3-pin | 2-pin Tee | — |
| TG501 | 3-pin | 2-pin Prll. | 3/9 |
| TG502 | 3-pin | Lamp Socket | 3/9 |
| TG503 | 2-pin Tee | 2-pin Prll. | 3/9 |
| TG504 | 2-pin Tee | 3-pin | 4/– |
| TG505 | 2-pin Tee | Lamp Socket | 3/9 |
| TG506 | 2-pin Parallel | 3-pin | 4/6 |
| TG507 | 2-pin Parallel | 2-pin Tee | — |
| TG508 | 2-pin Parallel | Lamp Socket | 4/– |
| TG509 | Lamp Socket | 2-pin Tee | — |
| TG510 | Lamp Socket | 2-pin Prll. | 4/– |
| TG511 | Lamp Socket | 3-pin | 4/– |

NOTE.—Where applicable Semi Rubber Enclosed 3-pin Plug Caps can be fitted in place of Light Top Entry Cap for an additional charge of 1/3.

## CONNECTORS—2-WIRE BLOCK

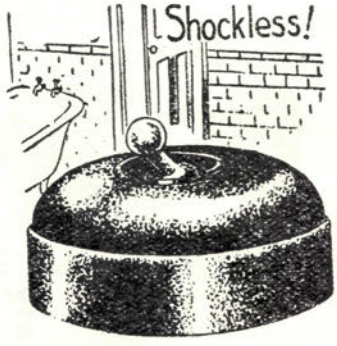
Porcelain Insulated Connector for joining wires, etc.

Cat. No. TG29—Single Wire .. **6D.** each

Cat. No. TG28—Two Wire .. **10D.** each

Cat. No. TG27—Three Wire **1/3** each

## SWITCHES—INSULATED ELECTRIC




| | |
|---|---|
| Cat. No. TG123— 5-amp., 1-way .. | 2/9 |
| Cat. No. TG124—10-amp., 1-way .. | 4/6 |
| Cat. No. TG125—15-amp., 1way Sperryn | 8/9 |
| Cat. No. TG122— 5/10-amp., 2-way "Titegrip" | 3/– |

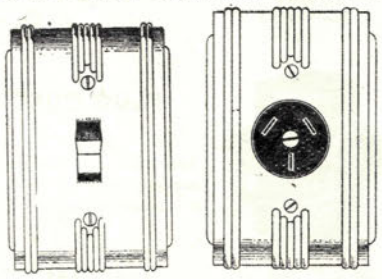
## FLUSH SWITCHES AND PLUGS

SWITCHES ONLY.

| | |
|---|---|
| Cat. No. TG169— 5-amp. Brown .. | 2/3 |
| Cat. No. TG171— 5-amp. Ivory .. | 2/8 |
| Cat. No. TG172—10-amp. Brown .. | 2/3 |
| Cat. No. TG173—10-amp. Ivory .. | 2/8 |
| Cat. No. TG174— 5-amp. Brown, 2-way | 3/– |
| Cat. No. TG175— 5-amp. Ivory, 2-way | 3/6 |

PLUG BASES ONLY.

| | |
|---|---|
| Cat. No. TG177—3-pin, Brown Bases .. | 2/– |
| Cat. No. TG178—3-pin, Ivory Bases .. | 2/5 |



PLATES FOR SWITCHES AND PLUGS.

| Cat. No. | |
|---|---|
| TG186 | Ivory Bakelite, Classic type, for 1 switch .. .. .. 1/5 |
| TG187 | Ivory Bakelite, Classic type, for 2 switches .. .. .. 2/7 |
| TG189 | Ivory Bakelite, Classic type, for 1 switch and 1 plug .. .. 2/7 |
| TG194 | Ivory Bakelite, Classic type, for 1 plug .. .. .. 1/3 |
| TG195 | Brown Bakelite, for 1 switch, Classic type .. .. .. 1/2 |
| TG196 | Brown Bakelite, for 2 switches, Classic type .. .. .. 1/9 |
| TG193 | Brown Plate for 1 plug .. 1/2 |
| TG185 | Brown Plate for 1 switch and 1 plug .. .. .. 1/9 |
| TG197 | Brown Fancy Screws .. 2d. each |
| TG198 | Ivory Fancy Screws .. 3d. each |

## METAL MOUNTING BOXES

| | |
|---|---|
| TG190—Single Gang Boxes .. .. | 1/8 |
| TG191—Double Gang Boxes .. .. | 3/– |
| TG192—Triple Gang Boxes .. .. | 4/3 |

## CEILING SWITCHES

CRABTREE-SPERRYN. BEST QUALITY.

Cat. No. TG127—1way .. **7/6** each

Cat. No. TG128—2-way .. **8/9** each

## CORDS FOR CEILING SWITCHES

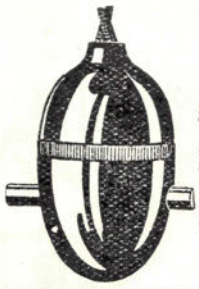
Spare Cords for Ceiling Switches.

Cat. No. TG116 **8D.** each.

## TABLE LAMP SWITCH

Small Push Button Switch for mounting in the base of table lamps, etc. Single hole mounting.

Cat. No. TG117— **3/-** each

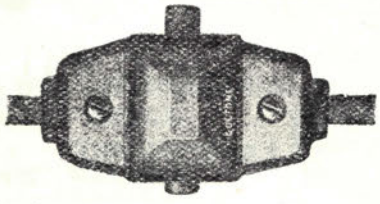


## EGG CORD SWITCH

Switch (230 volt, 2 amp.) for hanging on end of cord. Handy for sick rooms, etc. British. Made of black bakelite.

Cat. No. TG132— **3/1** each

## LINE CORD SWITCHES



For through connection. Made of bakelite. This is a useful switch for fitting on the cords of vacuum cleaners, appliances, etc.

Cat. No. TG131 .. .. .. **4/-** each

## MINIATURE SWITCHES

Here's a handy little switch suitable for radio and motor-car work. Positive action. Nicely finished (nickel plated). British made.

Cat. No. TG118 **2/4**

## 3-HEAT SWITCH

Flush Range Switch, suitable for Neeco and other ranges, grillers, etc., employing 3 heat flush switches. Dimensions 1¾ in. x 1¾ in. Complete with lock nut and black pointer knob.

Cat. No. TG513 .. .. **17/-** each

## CEILING ROSES

Bakelite Ceiling Roses for electric light pendants.

Cat. No. TG32 .. .. **1/9** each

## FUSES, ELECTRIC RANGE

Screw Type Fuses are used on nearly all makes of electric ranges and other electrical appliances.

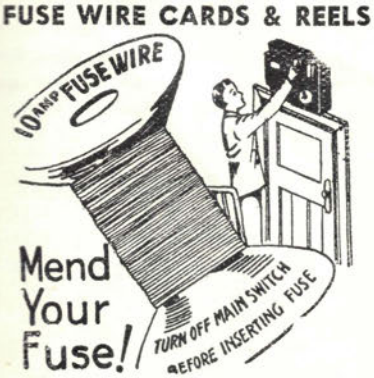
Cat. No.
TG40— 5 amp.
TG41—10 amp.
TG42—15 amp.
TG43—20 amp.

8D. each

Set of Five costs .. .. .. 3/-

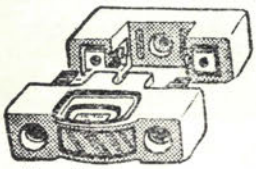
BUY AND SAVE!

## FUSE WIRE CARDS & REELS




| | | |
|---|---|---|
| TG46—5 amp., on card .. | .. | 3d. each |
| TG47—10 amp., on card .. | .. | 3d. ,, |
| TG48—15 amp., on card .. | .. | 3d. ,, |
| TG350—3 amp. (¼lb. reels) | .. | 1/7 ,, |
| TG351—5 amp. (¼lb. reels) | .. | 1/7 ,, |
| TG352—10 amp. (¼lb. reels) | .. | 1/8 ,, |
| TG353—25 amp. (½lb. reels) | .. | 4/6 ,, |
| TG354—50 amp. (½lb. reels) | .. | 4/5 ,, |

## Fuses for Switchboards, Etc.



2-piece Fuse Blocks.
Cat. No. TG160— 5-amp .. 2/3 each
Cat. No. TG161—10-amp .. 2/3 each

## INSULATED SCREW EYES

The wiring regulations state that all flexible cords running along walls and ceilings must be supported by an insulated screw eye every 12 inches. Well, here they are:—

Cat. No. TS422 .. 4D. each

## CABLE CLIPS, BUCKLES

Cat. No. TG514 .. 1D. each, 8D. doz.

## INSULATING BEADS

Fishline white Insulating Beads. Suitable for insulating elements, lead-ins, grillers, irons, soldering irons, etc.

Cat. No. TE410 .. .. 2D. dozen

## Best British BELL

British. Pressed iron frame. Silver contact points. Terminals under cover. Nickel-plated steel gong, 2¾in. diameter. Bakelite case. For battery or 4-volt A.C. operation.

Cat. No. TG320 11/-

## BRITISH BUZZER

British good quality Buzzer in bakelite case.

Cat. No. TG319 5/9 each

## BELL TRANSFORMERS

Bell Transformers for 230-volt supply. Output 3/5/8 volts. Moulded into an attractive bakelite case. British.

Cat. No. TG337 .. .. 17/9 each

## BELL WIRE

Best quality British Bell Wire. Well Insulated Waxed Covering. Single Strand.

Cat. No. TW113—1/22 S.W.G. .. 2D. yd.

Cat. No. TW113A—1/22S.W.G. 60ft coil .. .. .. 2/6 coil

## WOOD BLOCKS

ROUND AND RECTANGULAR WOOD BLOCKS, for mounting switches, ceiling plates, etc. Carefully made and well finished. Recessed. (Made in N.Z.)

| | |
|---|---|
| Cat. No. TG79—3½in. Round .. | 5D. each |
| Cat. No. TG83—3½ x 3½ square | 8D. each |
| Cat. No. TG80—6 x 3 rectangular | 9D. each |
| Cat. No. TG81—9 x 3 rectangular | 1/- each |
| Cat. No. TG82—6 x 6 square | 1/6 each |

## "ROUND" BELL PUSH

Good quality Brown Bakelite Push; 1¾ in. diameter.

Cat. No. TG334 2/2 each

## "Cubist" BELL PUSH

Bell Push of exceptionally attractive appearance, suitable for inside or outside use. Moulded Bakelite. Size 2⅝in x 2in.

Cat. No. TG326 2/2 each

## BAKELITE PEAR PUSHES

Bell Pear Push for cord suspension. Attractively finished in moulded bakelite. The plunger is of polished bone.

Cat. No. TG335 2/- each

## SQUARE BELL PUSH

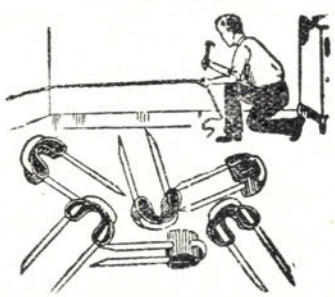
Attractively designed moulded Bakelite. Size, 2in. square.

Cat. No. TG333 2/3

BELL BATTERIES PAGE 36

## BELL STAPLES

INSULATED STAPLES
Make a Neat Job!



Insulated Staples for tacking up bell wire.

Cat. No. TS118 .. .. 2½D. doz.

(9d. Packet of 50)

## WOODEN ERA BLOCKS

Cat. No. TG78—Era Blocks, with connectors .. .. .. 3/-

# Osram Lamps

*Light Brighter* *Last Longer*

## OSRAM STANDARD VACUUM BULBS

### Clear or Frosted. 240 v.

Low intensity, small consumption lamps for passages, halls, etc., or where it is necessary to have a small lamp burning over a long period. Standard Bayonet base.

Cat. No. TL201— 15 watt 1/11 each
Cat. No. TL202— 25 watt 1/11 each

## OSRAM GAS-FILLED GLOBES

### Clear or Frosted. 240 v.

A gas-filled globe suitable for every purpose. Clear types as used for ordinary house lighting in sizes to sufficiently illuminate any room, no matter how large or small. Used extensively in shops, stores, and factories. The pearl type is used mainly in confined spaces, where a large amount of close work is done, or where work under artificial light for long periods is necessary. Frosted just sufficiently not to impair the efficiency of the Lamp, but to keep the sharp glare from the eyes. Ideal for Reading Lamps, Desk Lights, Offices, etc. STANDARD BAYONET BASE.

Cat. No. TL215— 40 watt .. at 1/11 each
Cat. No. TL216— 60 watt .. at 2/– each
Cat. No. TL217— 75 watt .. at 2/9 each
Cat. No. TL218—100 watt .. at 3/6 each
Cat. No. TL219—150 watt .. at 6/– each
Cat. No. TL220—200 watt .. at 9/– each

## VACUUM SCREW-IN GLOBES

Similar type of Vacuum Bulb as described at top of this column but using the Edison Screw (E/S) Standard Screw Base.

Cat. No. TL600—240 volts, 15 watts 1/11 each
Cat. No. TL601—240 volts, 25 watts 1/11 each

## SCREW-IN GLOBES

The same type of Gasfilled Globes as previously described, but using the Edison Screw (E/S) Standard Screw base.

Cat. No. TL602— 40 watts .. 1/11 each
Cat. No. TL603— 60 watts .. 2/– each
Cat. No. TL604— 75 watts .. 2/9 each
Cat. No. TL605—100 watts .. 3/6 each
Cat. No. TL606—150 watts .. 6/– each
Cat. No. TL607—200 watts .. 9/– each
Cat. No. TL608—300 watts .. 14/1 each

G.E.S. (GOLIATH) LARGE SCREW BASE

Globes fitted with this special base for use in halls, factories, floodlights, etc.

Cat. No. TL211— 300 watt .. 12/6 each
Cat. No. TL212— 500 watt .. 20/9 each
Cat. No. TL180—1000 watt .. 33/3 each

## OSRAM NEON LAMPS

An ideal lamp for the sick-room or for places where it is necessary to have a lamp burning all night. A soft light, consuming only 5 watts and burning for 7 days for only 1d.

Cat. No. TL21— Standard Size, 5 watt, Neon Lamp .. 5/6

Pygmy size ½ watt NEON GLOBE, as used for test panels, etc. Standard B/C base.

Cat. No. TL20—Dwarf Neon Indicators— 5/2 each

## ROUGH SERVICE LAMPS

Vacuum type Lamps with special reinforced filaments for places where ordinary lamps have a short life, due to excessive vibration. Mainly used in garage hand-lamps, or machine lights.

Cat. No. TL237—40 watt B/C Base 2/6 each
Cat. No. TL238—60 watt B/C Base 2/6 each
Cat. No. TL609—40 watt E/S Base 2/6 each
Cat. No. TL610—60 watt E/S Base 2/6 each

## Lamps for House Lighting Plants

Low voltage globes with Standard bayonet cap base. Used mainly for house lighting plants in country districts. The 6 and 12 volt types can be used from a car battery for tent lighting, or in conjunction with wind-charger installations.

6 VOLTS.

Cat. No. TL500—10 watt .. 2/4 each
Cat. No. TL501—15 watt .. 2/4 each
Cat. No. TL502—25 watt .. 2/4 each
Cat. No. TL503—40 watt .. 2/4 each

12 VOLTS.

Cat. No. TL504—10 watt .. 2/4 each
Cat. No. TL505—15 watt .. 2/4 each
Cat. No. TL506—25 watt .. 2/4 each
Cat. No. TL507—40 watt .. 2/4 each
Cat. No. TL511—60 watt .. 2/10 each

25 VOLTS.

Cat. No. TL550—15 watt .. 2/2 each
Cat. No. TL551—25 watt .. 2/2 each
Cat. No. TL552—40 watt .. 1/11 each
Cat. No. TL553—60 watt .. 2/– each

32 VOLTS.

Cat. No. TL560—15 watt .. 2/2 each
Cat. No. TL561—25 watt .. 2/2 each
Cat. No. TL562—40 watt .. 1/11 each
Cat. No. TL563—60 watt .. 2/– each

50 VOLTS.

Cat. No. TL570—15 watt .. 2/2 each
Cat. No. TL571—25 watt .. 2/2 each
Cat. No. TL572—40 watt .. 1/11 each
Cat. No. TL573—60 watt .. 2/– each

## Osram Gas-Filled 110 Volt Lamps

Low voltage globes as used on ships. Several districts not converted to the 240 volt supply still use this voltage. Available in B/C or E/S Base.

110 VOLTS.

Cat. No. TL580— 15 watt .. 1/11 each
Cat. No. TL581— 25 watt .. 1/11 each
Cat. No. TL582— 40 watt .. 1/11 each
Cat. No. TL583— 60 watt .. 2/– each
Cat. No. TL584— 75 watt .. 2/9 each
Cat. No. TL585—100 watt .. 3/6 each
Cat. No. TL586—150 watt .. 6/– each
Cat. No. TL587—200 watt .. 9/– each

110 VOLTS. Special G.E.S. ("Goliath") Base.

Cat. No. TL588—300 watt .. 12/6 each
Cat. No. TL589—500 watt .. 20/9 each
Cat. No. TL590—1000 watt .. 33/3 each

LAMPHOUSE for LAMPS

## Pigmy (Pilot Lamps)

15 WATT. SMALL SIZE BULB.

Cat. No. TL200 .. .. .. 1/11 each

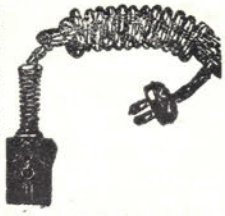
## TORCH LAMPS

### Standard Types Best Quality

Cat. No. TL103—4 volts .. 11d. each
Cat. No. TL112—2.5 volts .. 9d. each
Cat. No. TL113—Focus 3.5 volts 9d. each
Cat. No. TL109—Focus 6 volts .. 1/- each
Cat. No. TL99—2.5 volts, pre-Focus type (American Fixed Focus) 1/9 each
Cat. No. TL1—6 volt 3 watt Cycle Dynamo Lamps .. .. 1/7 each
Cat. No. TL2—6 volt 1.8 watt Cycle Dynamo Lamps .. 1/7 each

# ELEMENTS AND SPARES

## APPLIANCE CORDS

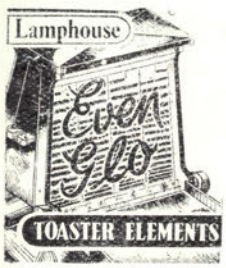


Cords for electrical appliances, irons, toasters, jugs, etc., etc. Fitted with "Fitall" type appliance plug on one end and a wall plug on the other end.

Cat. No.
TE800—Cord with 2-pin parallel Cap **6/3**
TE801—With two-pin tee cap .. **6/3**
TE803—With three-pin cap .. **7/6**
TE803A—With part Rubber enclosed three-pin Cap .. .. **8/9**

(Note.—The above are fitted with 6 feet best cord. Extra long cords can be supplied Add 1/9 for each extra yard required.)

## TOASTER SPARES




### "EVEN-GLO" TOASTER ELEMENTS

There's an "EVEN-GLO" ELEMENT to fit every make of Toaster. Made with good quality mica and English Nichrome Ribbon, these elements are a first grade production. If you are not too sure as to what make of element your toaster takes, forward us the old one and we will make a new one to pattern.

Cat. No. TE1003—Speedee Type 9/11 ea.
Cat. No. TE1004—Hotpoint Type .. 8/11 ea.
Cat. No. TE1006—Hi-Speed Type .. 8/– ea.
Cat. No. TE1007—Magnet Type .. 9/11 ea.
Cat. No. TE1008—Hecla Type .. 8/– ea.
Cat. No. TE1009—Universal 4-Strip 8/11 ea.
Cat. No. TE1010—Westinghouse Type .. .. .. .. 7/6 ea.
Cat. No. TE1011—Effesca .. .. 8/11 ea.
Cat. No. TE1012—Servex .. .. 8/– ea.
Cat. No. TE1013—Ultimate .. 8/– ea.
Cat. No. TE1014—Majestic Type 8/11 ea.
Cat. No. TE1015—Monarch type (2-Strip) .. .. .. .. 8/- ea.
Cat. No. TE1017—"Neeco Chevron" type .. .. .. .. 12/6 ea.

### TOASTER TRAYS

Cat. No. TE760—For "Speedee" Toasters .. .. .. **5/3** each
Cat. No. TE759—For "Speedee Tiffin" Toasters .. .. **7/6** each
See page for measurements.

### TOASTER SPRINGS

Coiled Springs. Suitable for practically all makes of Toasters.
Cat. No. TE945A .. .. **7**D. each

### TOASTER KNOBS

ROUND KNOB. Suitable for Toaster Doors, Kettle Lids, Saucepan Lids, etc.
Cat. No. TE938 .. .. .. **5**D. each

FLAT KNOB. For "Speedee" Toaster Doors.
Cat. No. TE939 .. .. .. **6**D. ea.

## RANGE SPARES

### "FITZALL" RANGE ELEMENTS

Electric Range Hot Plates. Elements that will fit all makes of ranges. Speedee to fit any make of range, 8in. to 11½in. diameter. 1750 watts.
Cat. No. TE550 .. .. .. **46/6**

Ditto, 6in. to 8in. diameter, 900 watts.
Cat. No. TE551 .. .. .. **36/6**

### "ULTIMATE" ELEMENTS FOR RANGETTES

OVEN FLAT ELEMENT
Cat. No. TE527 .. .. **37/11**

HOTPLATES FOR RANGETTES.
Cat. No. TE570—Ultimate 6in. .. **28/3**
Cat. No. TE571—Ultimate 8in. .. **39/6**

### KETTLE ELEMENTS

"HECLA" KETTLE STRIPS
Most kettles are fitted with two of these strips and several are fitted with three.
Cat. No. TE1030 .. .. **8/6** each

PERCOLATOR ELEMENTS
Cat. No. TE1040—Elements to fit Universal type Coffee Percolators ..... **8/8** each

### KNIGHT CLEANER SPARES

Cat. No. TE238—Carbon Brushes .. **1/3**

### CARBONS FOR HEALTH LAMPS

Spare Carbons for Pifco and other Arc type Health and Sun-tan Lamps.
Cat. No. TE599 .. .. **4/-** pair

## JUG SPARES

### THE "WIRELESS" JUG ELEMENT

The Element that can't burn out even if the jug is boiled dry. No spiral windings, etc. Can be easily fitted to any make of porcelain jug. Instructions with each element. Patented principle.
Cat. No. TE517 .. .. **10/-** each

### RUBBER RINGS

For fixing Elements in metal jugs, such as Speedee, Ultimate, etc.
Cat. No. TE500 .. .. .. **6**D. each

### "SPEEDEE" JUG ELEMENTS

Coiled Copper Elements, for Enamelled or Chrome Jugs, "Speedee" Kettles, etc.
Cat. No. TE516 .. .. **12/6** each

### JUG ELEMENTS

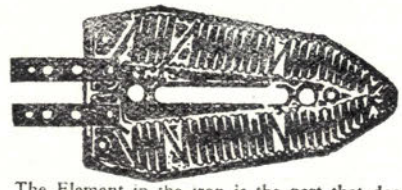
Similar to above. 12 months' guarantee.
Cat. No. TE507—
**17/6** each

### TERMINAL PINS

Contact Pins as used on the "Neeco" and similar makes of Porcelain Jugs. Comprises 1¾in. Brass Bolt with Contact Stud and two Brass Washers.
Cat. No. TE563 .. .. .. **1/-** each

## IRON SPARES

### EVEN-GLO IRON ELEMENTS



The Element in the iron is the part that does all the work and practically the only part that goes wrong. These Elements are specially constructed for long service, and will fit all standard makes of irons.

FITALL TYPE IRON ELEMENTS.
Cat. No. TE508 .. .. **6/9** each

Iron Elements, 110v.
Cat. No. TE504 .. .. **8/8** each

"HOTPOINT" IRON ELEMENTS, 240v.
Cat. No. TE1026 .. .. **7/6** each

"WESTINGHOUSE" AUTOMATIC IRON ELEMENTS
Cat. No. TE1025 .. .. **9/6** each

### APPLIANCE TERMINALS

Appliance Terminals, for fitting in the back of electric irons, etc. Supplied complete with nuts. Cat. No. TE400 ..... **8**D. each

### ELECTRIC IRON HANDLES

Wooden handles for electric irons—will fit practically all makes.
Cat. No. TE405 .. .. **1/9** each

### ELECTRIC JUG ELEMENTS

Spiral Windings for Electric Jugs. 230 volt.
Cat. No. TE514—
**1/-**

Porcelain Bobbins for Jug Elements.
Cat. No. TE515—
**1/3** each

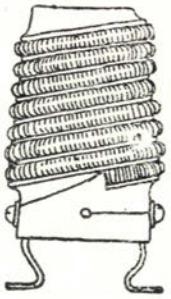
Complete Jug Elements, consisting of winding on bobbin and connecting rods.
Cat. No. TE560 .. .. **4/3** each

# Radiator Elements and Spares

## BOWL FIRE ELEMENTS

"FITZALL" BOWL FIRE ELEMENTS

This type of Element can be adapted to numerous makes of Bowl Fire Radiators. Radiators with elements using the plug-in or screw-in base may, with slight adaption, take this type of element. Distance between screw holes on legs of former 1⅛in. 750 watt spiral.



Cat. No. TE505—
**6/6** each

## PENCIL ROD ELEMENTS

"Even-Glo"

10in. Element, 1000 watt, with end caps and fixing screws.—Cat. No. TE523 .. **8/6**

Ditto, 12in., 1000 watts.
Cat. No. TE521 .. .. **12/6**

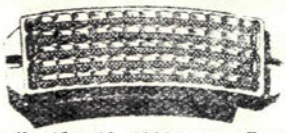
## SPARE SHAVER HEADS

Cat. No. TE579—Remington Blue Streak Twin Cutters .. .. **31/-**

Cat. No. TE580—Remington Oval 5U Head .. .. .. **21/5**

Cat. No. TE581—Schick Heads .. .. .. **40/-**

## RADIATOR ELEMENTS



Large tile, 9¼ x 3⅛, 1000 watts. Complete.
Cat. No. TE519 .. .. .. **14/6**

Small tile, 7⅜ x 3, 1000 watts.
Cat. No. TE518 .. .. **12/3**

## ELEMENT FORMERS

CONE TYPE. Heavy porcelain cone type radiator formers. Height 4in., diameter 2in. Wide recess to take standard 1000 watt wire element. No base or supports provided. Porcelain drilled at both bottom and top to simplify the attaching of spiral.

Cat. No. TE506—
**4/3**

Cat. No. TE506A—Similar to above but slightly smaller. Height 3in., Diam. 1⅛in. .. **4/3**

## PORCELAIN ELEMENT BARS

Round Porcelain Bars for Radiator Elements, etc. Unwound. Size 9⅜in. x ⅜in. diam.
Cat. No. TE502 .. .. **2/3** each

Cat. No. TE501—8½ in. x ⅜in. **2/3** each

## SPIRAL ELEMENT WINDINGS

Spiral Element Windings for re-winding Radiator, Stove, and Hotplate Elements, etc., etc. Made of first grade English Resistance Wire.

Cat. No. TE509—230 volt, 600 watt .. **2/-**

Cat. No. TE510—230 volt, 750 watt .. **2/3**

Cat. No. TE511—230 volt, 1000 watt .. **2/6**

## "UNIVERSAL" MIXER BOWLS

Spare Bowls, cream coloured glass, for "Universal" Cake Mixers.

Cat. No. TE823—Large .. .. **30/-**

Cat. No. TE824—Small .. .. **18/6**

## "DORMEYER" MIXER BOWLS

Spare Bowls, Clear Glass, for Dormeyer Electric Mixers.

Per Yd.

Cat. No. TE833—Large .. .. **19/6**

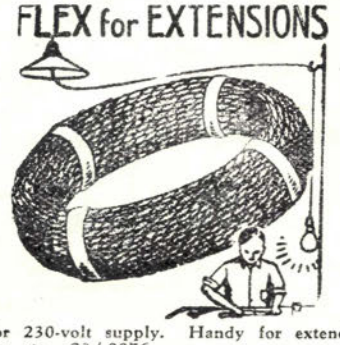
Cat. No. TE834—Small .. .. **10/6**

## "OXFORD"

9½in. Replacement Element, without end caps. Heavy twisted end leads for secure contact. Made for "Speedee" and similar Radiators. 1000 watts.—Cat. No. TE512 .. **5/6** each

# WIRE — FLEX — CABLES

## FLEX for EXTENSIONS



For 230-volt supply. Handy for extending lights, etc. 23/.0076.

Twin Twisted Cotton-covered Eng. Rubber, Insulated
Cat. No. TW70 .. .. .. **9**D. yard

Ditto P.V.C. Insulated—
Cat. No. TW165 .. .. **10**D. yard

**RADIO WIRES**
**See Page 56**

## WIRE, FLEXIBLE

Two and three-wire. 23/.0076 P.V.C.. Flexible, for extensions, appliances, etc. Each core is P.V.C. insulated braided overall.

Cat. No. TW90—2-wire ..... **1/-** yard

Cat. No. TW91—3-wire .. **1/6** yard

## WIRES, HEATING

23/.0076 Rubber-insulated Asbestos-covered heating flexible. Covered overall with a glazed cotton braid. Used for toasters, and other appliance cords.

Yard.

Cat. No. TW66—2-wire .. .. **1/4**

Cat. No. TW67—3-wire .. .. **1/10**

Cat. No. TW71—40/0076, 2-wire **1/9**

Cat. No. TW72—40/0076, 3-wire **2/2**

Cat. No. TW73—70/0076, 3-wire **2/8**

## TRU-RIP FLEX

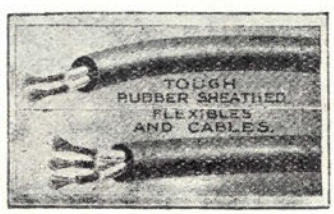
Thin Plastic-covered Flex. Two wires laid flat. Handy for wiring Table Lamps, etc.
Colours: Brown, Black, Red, White, Clear.
Cat. No. TW172 .. .. **9**D. yard

## ART SILK FLEX

LIGHTING FLEX, 23/0076. Twin wires enclosed in single braided casing. Available in Pink, Green, or Blue flecked. Ideal for ornamental fittings, reading lamps, etc.

Cat. No. TW166 .. **10½**D. yard

## CABTYRE RUBBER FLEX




Heavy rubber-covered Circular Flex for extensions in workshop. Flexible. 11/.012.

Cat. No. TW75—2-wire ..... **1/4** yd.

Cat. No. TW76—3-wire ..... **1/10** yd.

## WIRES, V.I.R. CABLE

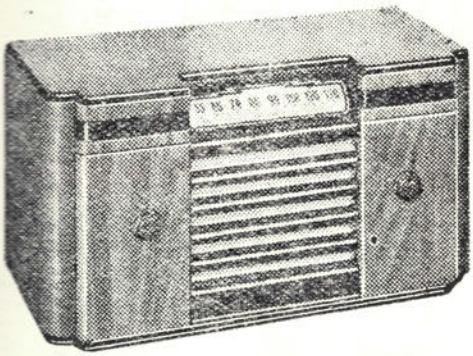
| Cat. No. | Yard. | 100 yard coil. |
|---|---|---|
| TW77—1/.044 (1/18) | 4d. | 28/6 |
| TW78—7/.029 (7/21) | 8d. | 56/– |
| TW79—3/.036 (3/20) | 6d. | 42/– |
| TW80—7/.036 (7/20) | 1/- | 90/– |
| TW81—7/.044 (7/18) | 1/2 | 101/– |

**MOTOR-CAR CABLES**
**See Page 22**

**PRICES ARE SUBJECT TO ALTERATION WITHOUT NOTICE.**

# "ENSIGN RADIOS"

## "Ensign" 6-Tube Broadcast Receiver



**2 Good Six-Valvers**

**AN EXPERTLY DESIGNED 6-VALVE RADIO OF PROVEN ABILITY! — A BROADCAST SET MADE STRICTLY TO SUIT NEW ZEALAND CONDITIONS!**

Six of the latest American Midget Valves built into a really grand circuit to give you SUPERB "PULLING POWER" and the usual "ENSIGN" OUTSTANDING TONAL QUALITY. Valves used are types 6X4, 6AQ5, 6ATG, 6BAG, 6BE6, 6BA6. 6½in. Anisotropic Alnico "Rola" P.M. Speaker.

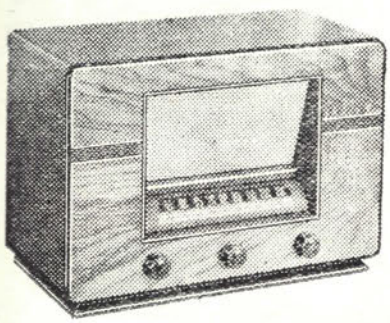
**No Aerial or Earth necessary!** This and the 6-Valve "Pacemaker" described below are fitted with a special Built-in Aerial and Earth, alleviating the necessity of the customary outdoor leads.

Set is mounted in an attractively veneered Cabinet measuring: Height 10in., Length 19in., Width 9¼in. Volume and Tuning Controls are mounted on the front of the Radio while the Tone Control is fitted to the side.

**A Radio we are proud to add to our Range of "ENSIGN" QUALITY RADIOS!**

**Cat. No. TR936 .. .. .. £29/17/6**

## "Ensign" 6-Tube "Pacemaker" Broadcast



This is the fourth and latest addition to the "Pacemaker" Radio range—a range unequalled in New Zealand for their STERLING PERFORMANCE, EXCEPTIONAL TONAL QUALITY, EXPERT WORKMANSHIP, & LOW COST.

The 6-Valver is a right-up-to-the-minute Receiver giving amazing results on the Broadcast band. A 6½in. Anisotropic Alnico "Rola" Speaker is used, giving an unsurpassed rich and mellow tone. As is usual with "Ensigns," the latest in components is used and the Valves are as follows: 6SG7, 6SA7, 6Q7G, 6U7G, 6V6GT, 6X5GT.

The distinguished Cabinet, measuring Length, 17in.; Width, 8¼in.; Height, 11in., is of the highest quality veneer and in keeping with the general standard of the set.

NO AERIAL OR EARTH IS NECESSARY! See the "ENSIGN" 6-VALVE RADIO described above.

TUNING, VOLUME and TONE Controls are mounted on the front of the Cabinet, as illustrated.

Cat. No. TR934 .. **£28/10/-**

*For* **Studio Realism!**

As from the 1st September, 1948, all "Ensign" Radios will be supplied with the new dials giving the altered station calibrations.

MOTORING

# If it's PORTABLES —we've got the best!

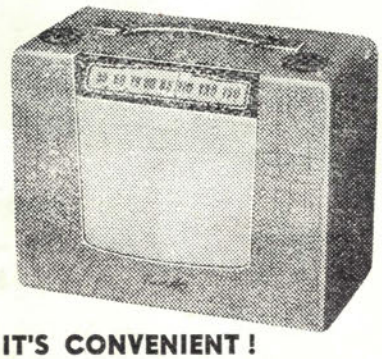
TENNIS PARTIES

## THE ENSIGN "Pacemaker" 2-way

A/C and D/C

Here's a Radio that can be used, anywhere. Operates from both the POWER POINT or from SELF-CONTAINED BATTERIES. You get real entertainment wherever you go with an "ENSIGN" PACEMAKER TWO-WAY PORTABLE. In the Car, on the boat or train, at the beach, hiking, picnicking, tramping, or in the home—just one flick of the finger and its at your service.

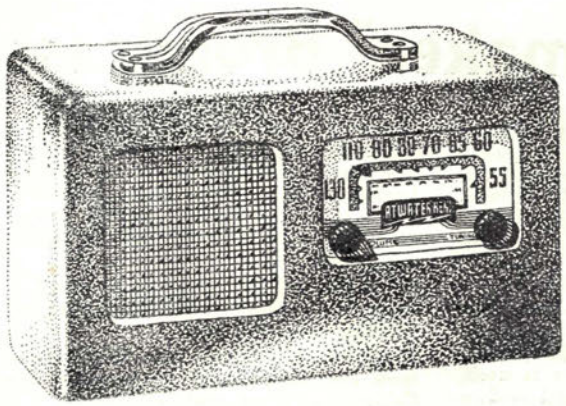
Brings in all N.Z. Stations. NO AERIAL OR EARTH necessary. Uses Five of the latest Midget Valves. An Anasotropic 5in. Speaker for that "easy on the ear" tone. CABINET MEASUREMENTS: 12in. x 9in. x 6½in. WEIGHT: 15lb. 4oz. (with Batteries). Uses Two Eveready 482 "Minimax" Portable Batteries, One C12 Eveready Battery. Also fitted with 5ft. flex for using from the light socket or power point.



**IT'S CONVENIENT!**
**IT'S NEAT!**
**IT'S THE BEST!**

Cat. No. TR937— **£32/10/-**

## "Atwater Kent" 5 Valve Portable



Camping, or on the water, tennis parties, at the beach, just wherever you take it —its at your command always.
A sterling little performer under all conditions.

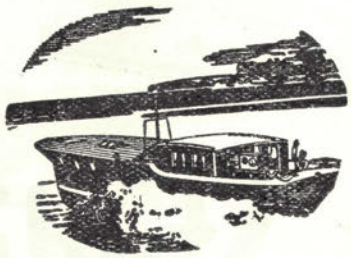
FIVE MODERN VALVES.

Types:
1A7GT, 1H5GT, 3Q5GT and two 1P5GT Tubes.

CABINET MEASURES: Length, 12in.; Height, 7½in.; Width, 6in.
Attractively finished with Plastic Carrying Handle and Coloured Dial.
Built in Aerial and Self-contained Batteries.
Uses 2 482 Eveready "Minimax" Batteries, and
1 742 1½ Volt "A" Battery.

Cat. No. TR942 . . . . . **£25/12/6**

CAMPING



ON THE WATER

# HANDYMEN'S SUNDRIES

## "C.M." WATER PUTTY

**Ready for use, simply by mixing with water. Dries rock hard without shrinking. Easy to apply, and can be used on wood, plaster, stone, and similar material. Can be coloured or varnished.**

Cat. No. TU163 (8 oz.) .. **1/8** per tin

Cat. No. TU165 — Large size (16 oz.) .. .. .. **2/8** per tin

## HACK-SAW BLADES

BEST QUALITY.

Cat. No. TU700 .. .. .. **6**D. each

## "QUICKMEND"

IS THE NEW SCIENTIFIC LIQUID MENDER

Specially prepared for mending Aluminium, Brass, Silver, Copper, White Metal, Iron, Pewter, Guttering, Enamel, Petrol Tanks, Carburettors, Water Tanks. Requires no HEAT, no SOLDERING IRON, no FLUX. Is not soluble in Spirits or Acids; withstands the action of hot or cold water.

Full instructions with each bottle.

Cat. No. TU167 .. Costs Only **1/7** Bottle

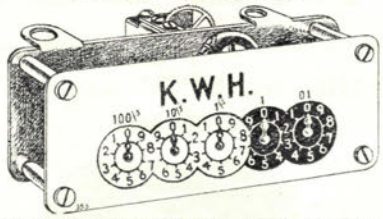
## WHY WASTE MATCHES?

The "Firefly" Gaslighter is operated by simply pressing the bottom, which connects a self-contained torch battery to the lighting filament. Ordinary torch battery used as a refill, costs 9d., lasts approx. 6 months. N.Z. made and patented.

Cat. No. TE39 .. .. .. **5/-**

Spare Filament Tips—Cat. No. TE40 **2/-**

## K.W.H. COUNTERS




An exceedingly useful unit, which can be put to a variety of uses by the average experimenter. Can be adapted to count turns when winding coils, chokes, transformers, etc. Will register up to 999 and 99/100th and down to 1/100th of a turn. Removed from electricity measuring meters.—Cat. No. TU140 .. **2/6** each

## "3-IN-1" OIL

Motors, Lawnmowers, Vacuum Cleaners, etc., are all very hard to replace. Keep them in A1 order with "3-in-1."

"3-in-1" also works miracles in brightening dull furniture and woodwork. A few drops on any soft cloth wrung out in water gives you a dusting and polishing cloth that not only polishes but also cleans and protects the finest finish.

Cat. No. TU151—3oz. Can .. **1/10½**

## RADIO SCREWDRIVERS

Insulated Handle Screwdrivers. Best steel, fine points, moulded handle that remains fast. 5000 volt test.—Cat. No. TU714 .. **10**D. each

## " KITCHEN TIDY "

The modern version of a small hygienic rubbish bin. Outside metal container sprayed either Cream or Green. A handy sized galvanised bin (8¼in. x 9¾in.) complete with handle, slips inside this container and can be removed and emptied at frequent intervals. Just press the metal lever as illustrated and the lid swings open. The housewife's delight. So attractive, clean and convenient. Keep your kitchen tidy with a "KITCHEN TIDY." Height 13¾in., diameter 9¾in.

Cat. No. TU351 .. .. .. **25/9**

# Solutions, Etc.

## PLASTIC WOOD

The perfect moulding material. A plastic material which is easily worked. A high-cclass filler for all types of jobs. Used by Carpenters, Joiners, Painters, Mechanics, Farmers and Householders. Hardens very rapidly, and, like wood, can be cut, sawn, planed, filed, nailed or screwed. It can be varnished, stained, painted or polished. Grease-proof, waterproof, and weather-proof.

Cat. No. TU166—2 oz. Tin .. **2/11**

Cat. No. TU168—1 oz. Tube .. **1/7**

## LIQUID CASEIN GLUE— "ATAGLUE"

Waterproof. A high-class, ready to use, casein liquid glue. "Ataglue" eliminates loss of time preparing hot glues. Does not stain. Gives a better spread than ordinary cold glues.

Cat. No. TU157 .. .. Tin **1/10½**

## COIL DOPE

CELLULOSE ACETATE LIQUID. Will spread a thin, transparent film over coil windings and other apparatus, thus giving full protection from atmospheric conditions. Spread on thinly with a fine brush. Is also an excellent adhesive. 2oz. Jars.—Cat. No. TU200 .. **1/6** Jar

## "INSUVARN"

QUICK DRYING INSULATING VARNISH

Insuvarn is a fast-drying moisture-proof Coil Dope. Painted over Coil Windings it will hold them rigidly in place and prevent the atmosphere getting at the windings. Excellent for coating Coil Formers before they are wound, and for impregnating wood panels so as to ensure they do not absorb moisture. Insuvarn can also be used for mending Speaker Cones, and a hundred and one other Radio jobs requiring a first-class insulating varnish or cement.

Every experimenter or serviceman should keep a jar of "INSUVARN" on hand.

Cat. No. TU159 .. .. .. **2/3** Jar

## " NEW GRIP " MENDS ANYTHING !

"NEW GRIP"—the Universal Cellulose Cement, mends anything: Slate, Glass, Paper, Ivory, Wood, Crockery, Canvas, etc. Recommended for Model Aeroplane building.

Cat. No. TU156 .. **1/7**

# RADIO ACCESSORIES

## COPPER AERIAL WIRE

Cat. No. TA255—7/22 Plain Copper. 100ft. Coil (7 Strand) .. .. 8/11 coil

Cat. No. TA254—7/22 Plain Copper, 75ft. coil (7 Strand) .. .. 6/11 coil

Cat. No. TA253 — 7/22 Plain Copper, 50ft. coil (7 Strand) .. .. 4/9 coil

Cat. No. TA267—7/23 Tinned Copper, 100ft. Coil (7 Strand) .. .. 5/11 coil

Cat. No. TA266—7/029 Tinned Copper, 50ft. Coil (7 Strand) .. .. 4/3 coil

Cat. No. TA257A—16 S.W.G. Solid Copper Wire, 100ft. coil .. .. 5/3 coil

Cat. No. TA257 — 16 S.W.G. Solid Copper Wire, 50ft. coil .. .. 2/9 coil

## ENSIGN LEAD IN WIRE

Heavy rubber - covered lead in wire. Will stand plenty of swaying and rough weather. Core is of pure copper stranded flexible wire (16.012). Ideal for lead-ins and also suitable for motor-car wiring and all other purposes requiring a well-insulated single flexible wire. Outside diam. 4 m.m. (approx.).

Cat. No. TA258 .. .. .. 1½d. ft.

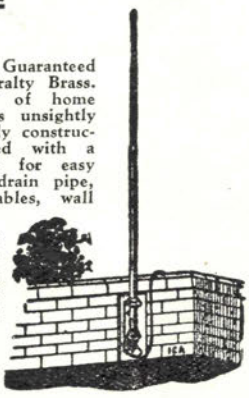
Cat. No. TA258A— 25ft. Coils .. 2/7 ea.

Cat. No. TA258B— 50ft. Coils .. 5/– ea.

Cat. No. TA258C— 75ft. Coils .. 7/6 ea.

Cat. No. TA258D—100ft. Coils .. 9/– ea.

## I.C.A. HOME ANTENNAS



12ft.; 4 Sections. Guaranteed Rust Proof Admiralty Brass. The latest type of home aerial! Eliminates unsightly wires. Very sturdy construction and supplied with a Universal Bracket for easy attachment to a drain pipe, chimney, roof gables, wall copings, etc.

Supplied complete with all fittings. Ready for erection. Clear, Noise - Free reception, with no power line interference.

Cat. No. TA710 **54/-**

## LIGHTNING ARRESTORS

American type. Glazed Porcelain, with terminals.

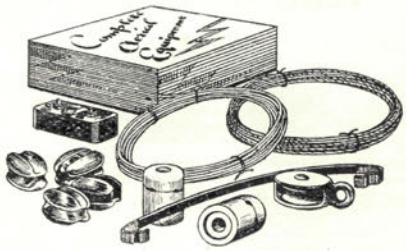
Cat. No. TA429 **2/6** ea.

## THE "NOTENNA" AERIAL ELIMINATOR

Equally successful on both broadcast and shortwaves. Replaces aerials of all types. Very compact size. No lightning arrestor required. Reduces noise, interference and man-made static. Simply attached between aerial and earth terminals on your set and to earth wire. Money back if you are not more than satisfied. Dimensions 4in. x 2¼in. x ¾in.

Cat. No. TA310 ..... **8/5**

## The "LAMPHOUSE AERIAL KIT"

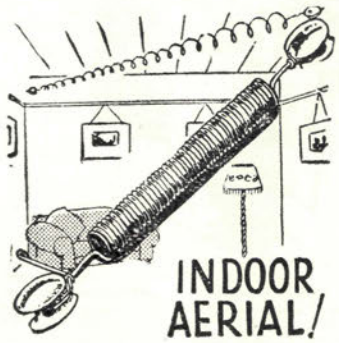


The "Everyman" Aerial Kit consists of standard equipment used in conjunction with all short-wave and broadcast receivers.

Contains: 100ft. 7/23 7-strand Aerial Wire, 4 Egg Insulators, 1 1in. Pulley, 1 Lightning Arrestor, 1 Lead-in Strip, 20ft. Lead-in Wire, 2 Nail Knobs. Actual cost of components if purchased individually, 17/-.

SPECIAL KIT PRICE—

Cat. No. TA330 .. .. **14/11**




An indoor spring type aerial that will stretch out to about 12 feet across an ordinary room, and will remain in its spiral form. Made from pure copper wire.

Cat. No. TA285 .. .. **3/6** each

## MASTLESS AERIALS

A neat, compact Aerial designed for use in crowded areas, where it is impracticable to erect a pole or horizontal type Aerial. Ideal for flat dwellers, etc. Comprised of several 12 gauge solid copper leads mounted in heavy service insulator. The insulator can be simply attached to any firm structure. Supplied with 25 feet lead-in wire. The Mastless Aerial can be erected in a space of 20 minutes.

Cat. No. TA296 **19/-**

## AERIAL SPECIAL!

### ARMY Z.C.1 TRANSCEIVER AERIALS

### 32ft. Mast!

### Excellent as House or Car Aerials

Comprises three 6ft. lengths ⅞in. pipe, four 4ft. lengths copper tubing, size varying from ½in. at one end to ⅜in. at the other; set of aerial stays, reducer (for fitting thin section of aerial into heavy section), one rubber socket for heavy section, one rubber socket and insulating condenser for mounting thin (whip) section only. May be used as a vertical house type antenna, or whip section could be used as car or caravan aerial. Supplied complete with carrying bags.—Cat. No. TX1085 Price **£2/10/-**

WHIP SECTION ONLY

Consists of four 4ft. sections Copper Tubing, varying from ½in. to ⅜in. diameter. These being approx. 16ft. long and light in weight make ideal elements for 10 metre rotary beam antennas, in addition to being suitable for auto, caravan and home use. Complete in canvas bag.—Cat. No. TX1080 .. Price **10/6**

## LEAD-INS, EBONITE

Lead-ins are used for putting through the wall. Consists of brass rod insulated with ebonite. With a nut and washer on each end. Diameter ½in. Ebonite Lead-in, 9in. long.

Cat. No. TA404 .. .. **2/4** each

## FLEXIBLE LEAD-IN STRIPS

Flexible Lead-in Strips that can be fitted under windows, when it is not desired to bore a hole through the wall to instal a permanent lead-in Tube. Length 9in.

Cat. No. TA405 .. .. **1/3** each

## AERIALITE AERIAL WIRE

Flexible Copper Wire, covered with waterproof braid. Excellent for indoor or outdoor aerials.

Cat. No. TA274— 25ft. Coils .. 2/–

Cat. No. TA275— 50ft. Coils .. 3/7

Cat. No. TA276— 75ft. Coils .. 5/5

Cat. No. TA277—100ft. Coils .. 7/–

# AERIAL EQUIPMENT

## EGG INSULATORS

Egg Insulators are almost universally used in N.Z. To secure good results you should put two or three on each end of the aerial. N.Z. made.

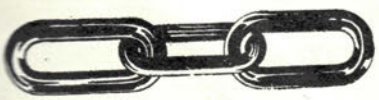
Cat. No. TA313 .. .. **5**D. each

LARGE EGG INSULATORS

2in. long and 1½ in. diameter. Brown glazed.

Cat. No. TA361 .. .. **10**D. each

## PLASTIC INSULATORS
### Chain Type



Very effective insulators. Put one chain on each end of your aerial. Worth 2/6 each, but because they are surplus war stocks, to be sold for a song. Length of 3 links, 9 inches. Weight, 3ozs. only.

Cat. No. TA315 .. .. **5**D. each

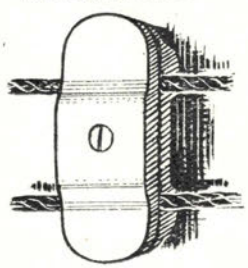
## CLAMP INSULATORS

Used for taking wires along outside walls, etc. Made in two pieces, and when screwed up, grip the wire and make a neat and efficient job. 1⅞ in. high, 1⅜ in. diameter.

Cat. No. TA351 .. **7**D. each

## "CLEAT" INSULATORS

Cleat Insulators for running two wires along walls, etc. 2¾in. long, 15/16in. wide, ¾in. high.



Cat. No. TA356
**7**D. pair

## "BUTTON" INSULATORS

For use on Electric Fence installations and for installing wires run along walls, etc. N.Z. made. Brown glazed.

1⅜ x 1⅛—Cat. No. TA354
4d. ea., 3/10 doz.
(Screws not included.)

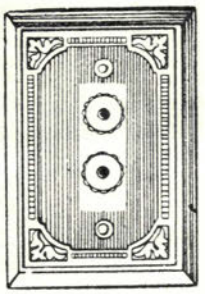
## SHACKLE INSULATORS

Used for corner insulators on Electric Fence Units and for other purposes requiring a substantial insulator. Size: 2¼in. diam., 1⅜in. high, ⅝in. hole.

Cat. No. TA362
**1/2** each

## AERIAL AND EARTH PLATES

Eliminate those unsightly wires leading to your set by having them concealed in the wall. This beautiful moulded plate is fitted with two terminals on to which the Aerial and Earth leads to your set connect. The Aerial and Earth proper are connected at the rear of the plate. Moulded in Ivory or Brown Plastic. Modern design.



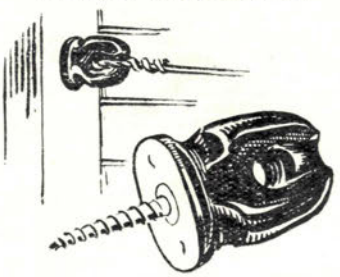
Cat. No. TA431 ..... **3/2** each

## PULLEYS—GALVANISED

Cat. No. TA412—
1-inch Galvanised Pulleys .. **1/-** each

Cat. No. TA413—
1½-inch Galvanised Pulleys .. **2/3** each

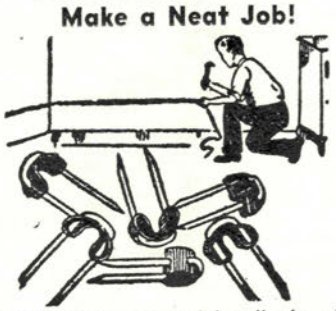
## HOUSE INSULATOR



Used for insulating electrical equipment from the house. Very solidly constructed; has a screw of 2 in. length and the porcelain portion measures 3 in. x 2½ in.

Cat. No. TA327 .. .. **2/2** each

## INSULATED STAPLES
### Make a Neat Job!



Insulated Staples are used by all who wish to make a neat job. The fibre insulation in these staples protects the wire and guards against loss of signal strength. British made.

Cat. No. TS118 **2½**D. doz. or **9**D. pkt. 50

## STAPLES

Coppered Staples (not insulated), for fastening earth wires, etc.

Cat. No. TS119— **1½**D. doz.

## AERIAL CLEATS

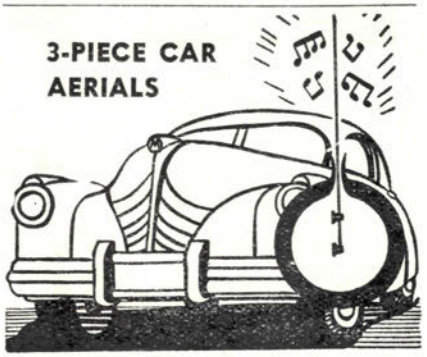
Galvanised iron cleats for securing halyard ropes.
Cat. No. TA414—
**1/3** each

## KNIFE SWITCHES

Single Pole Double Throw Aerial-Earth Switches. Bakelite base. British.

Cat. No. TS490 .. .. .. **2/3**

## 3-PIECE CAR AERIALS



### Noiseless! —— Rattle Proof!

Chromium-plated 3-piece Auto Radio Aerials. Extend from 23½in. to 72in. in 3 Telescopic Sections. Guaranteed rustproof. Fitted with 36in. shielded lead-in. Bakelite mouldings for side mounting. Excellent finish.—Cat. No. TA703 .. **50/-** complete

## MORE WAR SURPLUS BARGAINS

### Amplifier Socket Plate

Small Metal Plate to which is attached 2 Octal Sockets, 3 Fixed Condensers and 4ft. Hook-up Wire.
Cat. No. TX1096 .. **1/6** each

### Units-Supply Partition

Metal Plate to which is wired 2 .02 Condensers, 1 .25 Condenser, 1 WW Resistor, 1 H.T. R.F. Power Supply Choke.
Cat. No. TX1097 .. **2/-** each

### Resistor Mounting Boards

4¼ x 2¼ with 7 pairs Lugs for mounting Resistors, Condensers, etc.
Cat. No. TX1089 .. .. **1/-** each

### Chokes for Vibrator Supply

R.F.H.T. Chokes—
Cat. No. TX1155 .. **1/9** each
LF Chokes—
Cat. No. TX1141 .. **1/9** each

### Fuse Holders

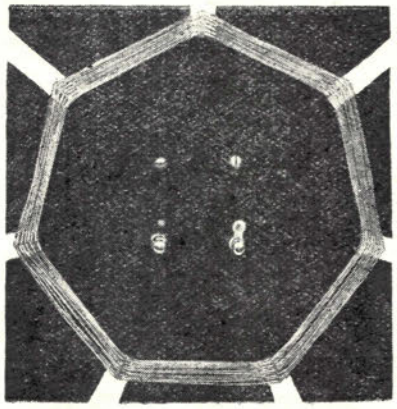
Two clips mounted on Bakelite strip for holding tubular glass fuses.
Cat. No. TX1113 .. .. **4**D. each

### Circuit Diagram and Parts List

For Z.C.1 Transceivers. Books contain Circuit, Illustrations and Parts List.
Cat. No. TX1132/3 .. **1/-** each

# EARTHS — BATTERIES

## AERIAL FOR PORTABLES



Loop Aerial for portable receivers, matched for standard Ensign Coils and fitted with primary winding for use with ordinary aerial when required. Physical dimensions 8in. x 7¾in.

Cat. No. TA300 .. .. .. **12/-**

### Coils to Match

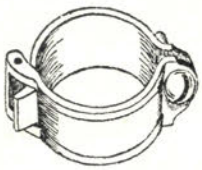
Cat. No. TC306—
Ensign Oscillator Coil .. **9/6**

Cat. No. TC340—
Iron Core I.F. Transformers .. **15/6** each

## EARTH CLAMPS

Heavy brass type, N.Z. made. Will ensure a good permanent earth on a water pipe, etc

½in. water pipe size (will fit pipes up to ¾in. outside diameter).
Cat. No. TA436—
**10**D. each



¾in. water pipe size (will fit pipes up to 1in. outside diameter).
Cat. No. TA437
**1/-** each

1in. water pipe size (will fit pipe up to 1¼in. outside diameter). Cat. No. TA438—
**1/3** each

## EARTH CLIPS

Light adjustable pattern. Has a number of holes so that screw can be shifted. Fits practically all sizes of pipes.

Cat. No. TA434 .. .. .. each **6**D.

## WIRE. TINNED EARTH

7/.029 (7 Strand) Bare Tinned Copper Earth or Aerial Wire.

Cat. No. TA264— .. .. **1½**D. ft.

## EVEREADY TORCH and RADIO BATTERIES

TRADE-MARK

## "A" BATTERIES

### No. 6 DRY CELLS

1½ volt IGNITION or BELL BATTERY.
Size 6½in. high; 2½in. Diam.
Weight, 2lbs. 2oz.
Cat. No. TB40—
**3/10** each

### "A" BLOCK BATTERIES

1½ v. "A" Battery, for use in Portable Receivers. Eveready type (742). Size 3¾in. x 2½in. x 2½in. Weight 1lb. 10oz.
Cat. No. TB57 .. .. .. **4/6** each

1½ v. "A" BATTERY, for large Portables, etc. Eveready type (741). Size 4½in. x 2½in. x 5¼in. Weight 3lb. 2oz. .. **8/9** each
Cat. No. TB56

1½ v. "A" BATTERY, for Home battery-operated Receivers. Eveready type (X250). Size 9¾in. x 4¾in. x 5¾in. Weight 10lb. 12oz. Cat. No. TB55 .. **28/9**

### SPECIAL "A" BATTERIES

Designed especially for use with Portable Receivers. 1.4 volts. Weight 2lb 12oz. Length 10¼in., width 3¾in., depth 1¼in.

Eveready Type (No. 745). Cat. No. TB58 **9/1**

### "HOTSHOT" BATTERIES

6-volt "HOTSHOT" IGNITION BATTERIES. Eveready type (1461). Size 7¼in. x 10⅜in. x 2¾in. Weight 9lb. Complete with canvas carrying handle. Cat. No. TB39 **£1/5/10**

### 108 VOLT PORTABLES

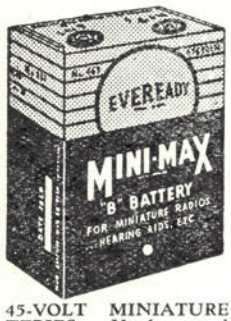
108-volt "B" BATTERIES. Constructed for use with the "Vidor" Portable Radios. Tapped at 3 v., 1½v., GB, 67½, 108v. Eveready type (C29). Size 8in. x 5in. x 3½in. Weight 6½lb.
Cat. No. TB49 .. .. .. **42/-**

## "B" BATTERIES

"Superdyne" 45-volt Heavy Duty "B" Batteries. For home receivers, etc. Extra long life. Eveready type (770).
Size 7¼in. x 4⅜in. x 8⅛in.
Weight 11¼lb, Tapped at 22½ volts.
Cat. No. TB42
**26/10**

### The . . . "PORTABLE 45"

45-volt Light Duty "B" Batteries, for use in Portable Radios, etc. Eveready type (762). Size 5¼in. x 2⅝in. x 4¼in. Weight 2½lb.
Cat. No. TB44
**16/11**



### "MINIMAX" BATTERIES

45-volt SMALL "B" BATTERY. Used extensively in portable sets. (Eveready type 482).
Size 5¾in. x 3½in. x 1⅜in.
Cat. No. TB47—
**18/-** each

45-VOLT MINIATURE MINIMAX BATTERIES. Used extensively in Deaf Aids. Eveready type (MP 45). Size 3¼in. x 1¾in. x 2⅜in. Weight, 9oz.
Cat. No. TB46 .. .. **12/3** each

67½-volt "MINIPACK" "B" BATTERIES. For Miniature Portable Receivers. Eveready type (467). Size 3¼in. x 1¾in. x 2⅜in. Weight 12oz.
Cat. No. TB59 .. **21/11** each

## "C" BATTERIES

(BIAS)

9-volt "C" BATTERY (793). Size 3¼in. x 1in. x 5¼in. Tapped at 1½, 3, 4½, 6, 9 volts. Cat. No. TB51 **4/10** each

4½ volt "C" BATTERY (761). Size 3¾in. x 1⅜in. x 4in. Tapped at 1½, 3, and 4½ volts. Cat. No. TB50 .. **3/2** each

9-volt "C" BATTERY (C12). Special type, now used in many modern portable sets.
Size 8¼in. x 3¾in. x 1¾in.
Cat. No. TB52 .. .. **8/2** each

## "OXFORD" RADIO BATTERIES

### 'OXFORD' Non-Sulphating Special Type RADIO BATTERIES

Heavy duty solidly constructed leak-proof Batteries that deliver maximum power. Thick plates, carefully sealed cells; built for long, enduring, trouble-free service. With radio type terminals; 18 months' unconditional guarantee. Batteries are supplied dry unless specially requested otherwise. They can also be supplied charged and filled with acid, at no extra cost, but freight is payable by purchaser on all charged batteries.

Cat. No.
TA20—2-volt, 100 amp., 4½ x 7 x 9⅜ **£2/1/6**
TA22—2-volt, 140 amp., 4½ x 7 x 9⅜ **£2/8/6**
TA23—6-volt, 100 amp., 7 x 9¼ x 9⅜ **£5/10/-**
TA24—6-volt, 140 amp. Type for Vibrators—
7 x 11⅛ x 9⅜ .. **£7/1/6**
TA26—6-volt, 160 amp. Type for Vibrators—
7 x 12⅝ x 9¼ .. **£7/18/6**

# These Goods Will Improve Your Reception!

## ENSIGN LINE FILTERS

These useful Units have two distinct purposes:

1. To stop interference entering the A.C. Mains at the source of the trouble.
2. To stop interference coming over the Mains from entering the Receiver.

The best place to stop interference is at its source and if you have a small motor or other Appliance which causes interference in your own or anyone else's Radio, it may be successfully cured by installing an Ensign Filter. The Filter is plugged in to the Power Point and the offending appliance plugged into the Filter. No other installation is required. It can be used on any appliance not exceeding 750 watts. Should it be impracticable to stop the trouble at its source, we must try and stop it from entering the Receiver.

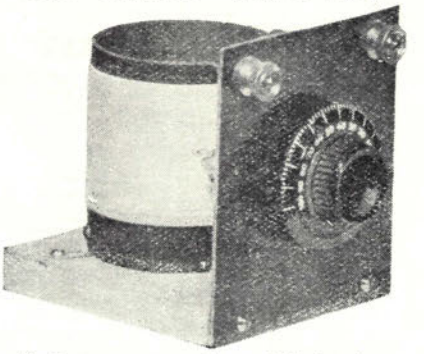
We must decide whether the man-made static, which is proving so troublesome, is being picked up by the aerial or is coming over the power lines or both. A good test is to tune the set to a point where the noise is particularly bad and turn the volume control well up. Now remove the aerial wire and attach it to the earth terminal, but do not remove the earth wire. The effect will be to reduce the noise level, but if the man-made static continues to be very severe you will at once know that at least a portion of the interference is coming over the A.C. power mains, and you will at least need an Ensign Line Filter before you can overcome the trouble. On the other hand, if the noise is entirely eliminated you will know that the noise is being picked up by the aerial and some form of noise-reducing aerial will be required.

Designed for use with electrically operated radio receivers. Simply fits between the receiver and the wall plug. It will definitely stop all man-made static entering through either A.C. or D.C. Mains. Particularly successful in D.C. and on ships with D.C. generators.

Cat. No, TA298 .. **25/6**

**TRY THIS "POLICEMAN OF THE AIRWAYS" AT OUR RISK!**

## THE "SIDNEY" WAVE TRAP

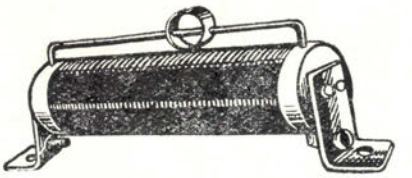


Used to separate stations which interfere or overlap each other. Gives sharper tuning to all size Receivers from Crystal Sets onwards. Will also act as a booster for strengthening weak stations.

Components mounted on a 4in. x 3½in. wooden baseboard. Front panel of light bakelite. Neat appearance. Printed instructions with every set.

Cat. No. TF504 .. .. Price **17/6**

## "ENSIGN" 3 IN 1 TUNERS



### Aerial Eliminator Aerial Tuner, Wave Trap,

Depending on the manner it is connected, this useful piece of apparatus serves any of the above functions. Operates on any make or model of radio receiver, greatly enhancing the performance. As an aerial tuner it will improve the reception of weak stations. As a wave trap it will prevent interference between stations and improve selectivity. As an aerial eliminator it makes an outdoor aerial unnecessary. The tuner can also be used as the tuning coil of a crystal or other small set. Supplied complete with instructions and can be fitted by anyone in a few minutes. Size 5 in. long x 2¾ in. high and 1¾ in. wide.

Printed details with each Tuner.

Cat. No. TC300 .. .. .. **5/11**

---

HERE'S . . .

## 5 GOOD REASONS WHY YOU SHOULD USE AN "AERITROL"

### A Truly Marvellous "Aid to Better Reception"

1. It will separate interfering stations.
2. It will reduce noise level and interference.
3. It will increase volume of weak stations.
4. It will eliminate outdoor and indoor aerials. Acting as a perfect aerial eliminator.
5. It controls volume from powerful local stations.

INSTALLED IN A FEW MINUTES, WITHOUT TOOLS!

*IT'S SAFE! IT USES NO ELECTRICITY! IT COSTS NOTHING TO RUN!*

Works on all types of Receivers, battery or electric—old and new. Constructed in strong metal case 4in. x 4in. x 4⅝in. high. Black crackle finish.

*Full directions supplied with each unit.*

Cat. No. TA1 .. .. Price only **33/6**

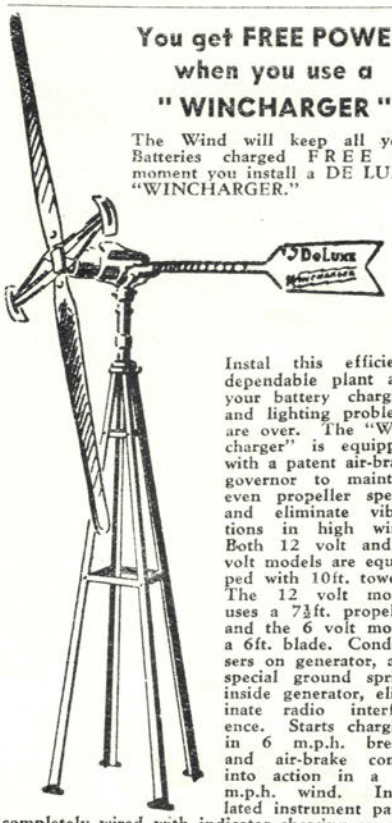
### *Try it at Our Risk!*

Send for an "AERITROL" to-day; try it in your own home for 7 days. If at the end of that time you are not thoroughly satisfied with it return it, and we will refund your money in full.

# BATTERY CHARGERS — VIBRATORS

## You get FREE POWER when you use a "WINCHARGER"

The Wind will keep all your Batteries charged FREE the moment you install a DE LUXE "WINCHARGER."




Instal this efficient, dependable plant and your battery charging and lighting problems are over. The "Wincharger" is equipped with a patent air-brake governor to maintain even propeller speed, and eliminate vibrations in high wind. Both 12 volt and 6 volt models are equipped with 10ft. towers. The 12 volt model uses a 7½ft. propeller and the 6 volt model a 6ft. blade. Condensers on generator, and special ground spring inside generator, eliminate radio interference. Starts charging in 6 m.p.h. breeze and air-brake comes into action in a 19 m.p.h. wind. Insulated instrument panel completely wired with indicator showing amount of charge or discharge. Charging rate may be altered to suit charging conditions. Supplied complete in every detail as illustrated. The ideal installation for farms, baches, etc.

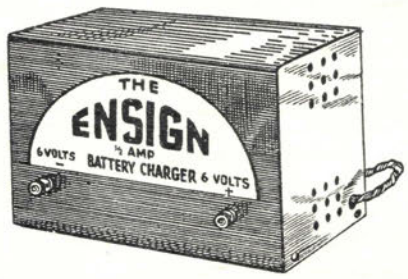
Cat. No. TA206—6-volt Model **£28/3/-**

Cat. No. TA207—12-volt Special Heavy Duty De Luxe Model .. .. **£39/17/6**

Cat. No. TA208 — Spare Blade for 6-volt model, 6ft. .. .. **73/6**

Cat. No. TA209 — Spare Blade for 12-volt model, 7½ft. .. **115/-**

## THE "ENSIGN" ½ AMP CHARGER




You never need to be stuck with a run-down Car or Radio Battery. These units will charge all types of 6-volt Batteries. Operate from 230 volt A.C. Current. Connect direct to Battery. Uses ½ amp Dry Metal Type Rectifier. Size of Sprayed Metal Case: Length 8in., Height, 5½in.; Depth, 4in.

Cat. No. TA608 .. .. **£4/12/6**

## SPARE BULBS FOR BATTERY CHARGERS

(TUNGAR TYPE.)

Cat. No. TA189—2 amp. **£1/18/6** each

Cat. No. TA190—6 amp. **£3** each

## SUPREME BATTERY CHARGER

Heavy duty type Battery Chargers. For operation from 230 Volt A.C. mains. Current consumption approximately 75 Watts. Will charge 2, 6, or 12 Volt Batteries at 1 amp. Size: Length, 8in.; Height, 5½in.; Width, 4½in. Complete with 3-wire cord, and instructions. Contained in strong metal case.

Cat. No. TA605 .. .. **£5/6/-**

## DRY RECTIFIERS

6-volt, ½-amp METAL PLATE RECTIFIERS. Suitable for Resistance or Inductive loading and Battery Charging, etc. For use with C.T. Transformer. Voltage across Secondary, 19 volts. C.T. at 9.5 volts. Copper on Secondary carries .35 amp continuous running.—Cat. No. TA175 .. **18/6** each

6-volt, 2-amp, similar to above. Suitable for 2-amp Battery Chargers. Copper on Secondary carries 1.4 amp. continuous use.

Cat. No. TA176 .. .. **33/6** each

## AKRAD VIBRATOR PACK

This pack has been designed specifically for the conversion of battery radio receivers to vibrator operation and contains the necessary high tension and low tension filtering.

ELECTRICAL SPECIFICATIONS: Input, 6 volts 1 amp; Output, 135 volts 30 milliamp; Reed, 7 pin synchronous.

FILTERING: Complete filtering is provided both for R.F. and Audio. This means to say that in addition to the normal R.F. chokes, there is included in the unit a high tension filter choke and a low tension filter choke.

MECHANICAL ARRANGEMENT: The reed, transformer and R.F. chokes are contained in a completely enclosed box which is rubber-mounted on to the base chassis. The rubber mounting eliminates mechanical noise due to the vibrator operation. The filter chokes are installed in this base chassis, which has mounted on it the output socket and the on/off switch.

Cat. No. TA213 .. .. **£8/10/-**

# War Surplus Bargains

## 12-VOLT VIBRATOR PACK

A real heavy duty Power supply for that vast field of battery-operated multi-tube Receivers, medium power Public Address Systems and low power Transmitters. Completely enclosed in a heavy metal cadmium-plated box with hash filter. They are ideal for short-wave Receivers. The dimensions are 6in. long by 4in. wide and 6in. deep. Although designed to operate from 12 volt D.C. they can be converted to 6v. The Output is 250 volts at 60 mills. The B Supply, smoothing choke and filter condenser are supplied separately. (ZC1 parts)

12 VOLT POWER PACK—

Cat. No. TX1001 .. .. **£3**

Spare Transformers for above, 12-volt to 300/180/0/180/300 volts.

Cat. No. TX1088 .. .. **17/6**

## METAL CASE AND LID

Strong Metal Case with Loose Lid. Sprayed Green. Robust job. Size 20½in. x 11½in. x 8½in. Excellent Storage or Tool Box.

Cat. No. TX1175 .. .. **10/-** each

## METAL PANELS

Front Metal Panel, as used on Z.C.1's. Size, 20in. x 8½in. Drilled for Dials, Controls, etc.

Cat. No. TX1174 .. .. .. **1/-**

## VIBRATORS

Vibrator Units for replacements or for constructors. Positive starting long-life Vibrators. Low cost per hour. Trouble-free operation.

6-volt Non-synchronous 4-pin type.

Cat. No. TB60 ..... **25/-**

6-volt Synchronous 5-pin type (for special socket).

Cat. No. TB61 ..... **27/6**

6-volt Synchronous 5-pin type (standard socket).

Cat. No. TB62 .. .. .. **27/6**

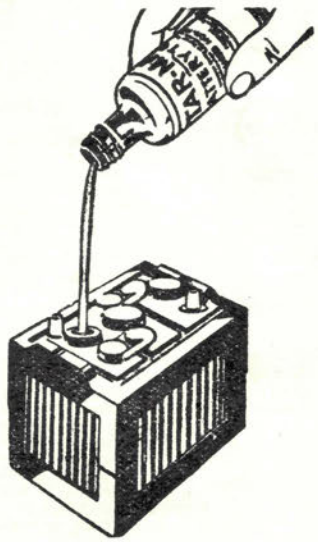
Cat. No. TB66—6-volt 7-pin .. **25/-** each

Cat. No. TB65—12 volt 7 pin Synchronous vibrators (ex Army stocks) **4/11** each

Sockets for Vibrators—5-pin special type.

Cat. No. TB63 .. .. .. **1/-** each

## *New Life for Old Batteries!*




# TAR-MAG

## WHAT TAR-MAG DOES

TAR-MAG dissolves the gradual deposit of Basic Sulphate of Lead crystals which impregnate the active paste material on the plates, thus preventing the electrolyte contacting with it, with the result the battery ceases to function although there is still plenty of life and usefulness.

TAR-MAG dissolves the crystals and enables the battery to function as new. TAR-MAG will bring your old battery up to full strength—will increase life of new batteries up to 50 per cent.

For Better Lighting and Split-Second Starting, try TAR-MAG.

TAR-MAG is a liquid which is simply poured into the cells. Complete with instructions.

Cat. No. TA70— Charge for 6-volt Battery **2/9**

Cat. No. TA70A— Charge for 12-volt Battery **5/6**

# The "Victory" Senior Amplifier

Features include: DUAL CHANNEL MIKE and GRAMOPHONE INPUT, POLARISED CONNECTIONS, BEAM POWER OUTPUT, FULL-TONE CONTROL, BALANCED PHASE INVERTER.

A high-quality, low-cost Amplifier intended for installations where moderate coverage is required. Suitable for Dance Halls, Public Meetings and small Outdoor gatherings. Comes complete, ready to connect up quickly and easily.

Full 10w. output with remarkably true Tonal Fidelity. Variable Tone Control is provided to accentuate bass or treble as desired and to aid in compensating for varying acoustical conditions.

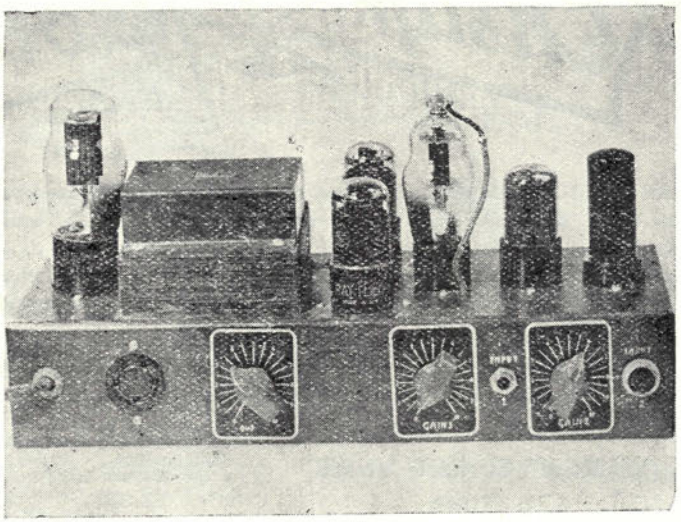
**LATEST CIRCUIT 6 VALVES**

Suitable Speaker for the above Amplifier is ROLA MODEL. 12/42 12in. P.M. (extra).

Cat. No. TS954 .. .. .. **£4/7/1**

Cat. No. TR852 .. .. .. **£13/12/6**

Cat. No. TR853 — As above, but with Pre-Amp. Stage .. .. **£15**



You get value at its best when you purchase your "1948 SURPRISE PACKET"—a package of all sorts of Radio and Electrical "odds and ends," new and used components of all descriptions.

Trust us with 5/- and if you are not more than satisfied we will refund your money.

THERE'S ONLY ONE JUDGE—YOURSELF !

TRY IT AT OUR RISK!

**Order Your "1948 SURPRISE PACKET" NOW! 5/-**

# The "Victory" Junior Amplifier

Features include Mike and Gramophone Input, Full Range Tone Control, Inverse Feedback, 5 watt output. A small Amplifier which will give astounding reproduction. Compact and attractive, suitable for Velocity, Crystal and Dynamic Microphones, continuously Variable Tone Control. Wide range frequency response, Hi-Fidelity Phone Reproduction.

**TECHNICAL SPECIFICATIONS**

**Peak Output, 8 watts; Rated Output, 5 watts; Input, Microphone and Gramophone; Gramophone gain, 76 D.B.; Hum Level, 55; Variable Tone Control; Output Impedance, 5,000 ohms to Speaker Transformer.**

HERE IT IS! NEW ZEALAND'S MIRACLE AMPLIFIER VALUE! This 5-watt Amplifier offers to users of small P.A. equipment the Lowest price high-gain Amplifier available on the market to-day, its competition-defying price indicates no compromise in quality.

**VARIABLE TONE CONTROL.**

Control is provided for compensation of acoustics when using in various locations. An ideal Amplifier for offices, Stock Rooms, Cafeterias, and Restaurants, Factories, Window Demonstrations, Meetings, and Small Orchestras, etc.

The Victory Junior Amplifier offers for the first time an intermediate Power Amplifier with every feature usually found in units selling at double the price. Splendid for use in Meeting Halls, Office Systems, Night Clubs, Auction Rooms, etc.

Cat. No. TR851 .. **Price £8/19/6**

**Suitable Speaker for the above Amplifier is ROLA MODEL K8 2,500 ohm. (Extra).**

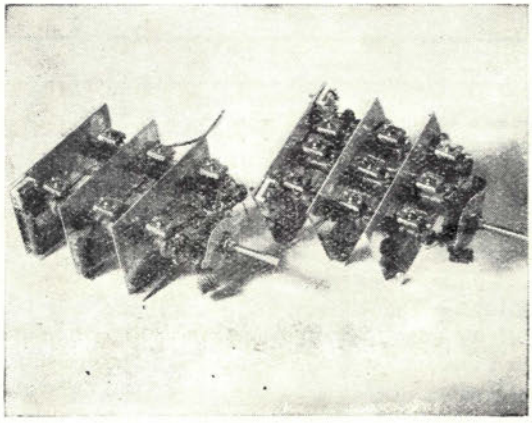
ONCE AROUND THE DIAL, IS ONCE AROUND THE WORLD — ON AN "ENSIGN" RADIO

# Ensign Coils

All ENSIGN Coils are designed by experts and are accurately tested and matched. ENSIGN Coils are designed for use with tuning condensers (measured without trimmers) of maximum capacity 440 to 480 mmfd. and minimum capacity 9 to 15 mmfd. and especially for the Plessey types "K" and "E", tuning condensers for which our dial scales are calibrated.

All coils other than those specified are wound on ⅜in. ext. dia. former and all broadcast coils are wound with seven or ten strand Litz secondaries and high impedance primaries. Broadcast Band Coverage, 535 to 1700 k.c.

## "ENSIGN" TUNING UNITS



Completely wired and assembled unit for use in 5-valve receivers. Consists of aerial and oscillator sections and has a coverage on short wave from 19/50 metres and broadcast 550 to 1500 k.c. for use with Plessey Type K. 1842-11. Condenser and 6K8 Converter Tube. Price includes all coils, wave change switch already assembled, padders, by-pass condensers, and trimmers. Air tested and aligned. Full instructions.
Cat. No. TC350 **£4/10/6**

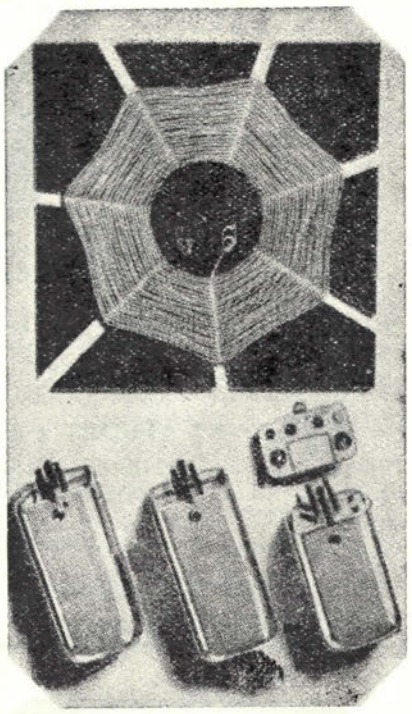
### DUAL WAVE UNIT

Dual Wave, assembled similar to the above, but containing Aerial R.F. and Oscillator Sections.
Cat. No. TC351 .. **£6/7/2**

### TRIPLE WAVE UNIT

Similar to above, containing Aerial, R.F. and Oscillator sections.
Cat. No. TC352 **£7/6/-**

## "ENSIGN" PORTABLE COIL KIT



Special Coil Kit for portable sets. Consists of "Ensign" Loop Aerial, 8in. x 8in. (matched to standard "Ensign" coils and fitted with primary windings for use with outdoor aerial when required); "Ensign" Oscillator Coil; 2 "Ensign" I.F. Transformers and Padder.
Cat. No. TC449 .. .. **53/-** each
Aerial only. Cat. No. TA300 .. **12/-**

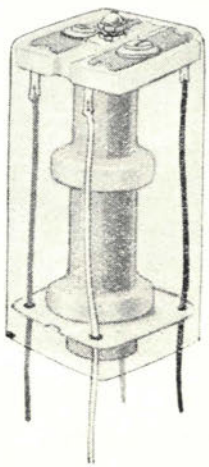
## "ENSIGN" SHORT WAVE COILS

Unshielded, wound on ⅜in. Formers, 19/50 Metres.
Cat. No. TC320—Aerial .. .. 5/6 ea.
Cat. No. TC321—R.F. .. .. 5/6 ea.
Cat. No. TC322—465 K.C. Oscillator 5/6 ea.

## BLACK INSULATING TAPE

Has many uses, such as binding hockey sticks, axes, etc., besides being an excellent means of insulation.
Cat. No. TS236A—5yd. rolls .. **10**D. roll
Cat. No. TS237—10yd. roll .. **1/-** roll
Cat. No. TS238—8oz. rolls .. **2/9** roll

## "ENSIGN" INTERMEDIATE FREQUENCY TRANSFORMERS



have been carefully designed by experts to give maximum results. Types suitable for midget, commercial or high fidelity receivers are available. These factors allow the experimenter and home constructor more scope than before when designing a receiver.

Cat, No. TC340—Iron Core, Litz wound in 1⅜in. square by 3½in. high can, 465 k.c.
**15/6** each

Cat. No. TC341—Air Core Ditto **14/6**

**All prices in this Catalogue are subject to alteration without notice.**

### AIR CORE TYPE

Air Core Litz Wound, mounted in 1⅜in. square by 1½in. cans. Broadcast.
Cat. No. TC303—Aerial .... 9/6
Cat. No. TC304—R.F. ..... 9/6
Cat. No. TC306—Oscillator, 465 KC 9/6

### IRON CORE TYPE

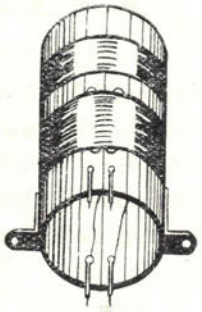
Iron Core Adjustable Permeability Litz Wound in 1⅜in. square by 1½in. cans. Broadcast.
Cat. No. TC301—Aerial .. .. 12/-
Cat. No. TC302—R.F. .. .. 12/-
Suitable Oscillator Coils for above (air core).
Cat. No. TC306—465 K.C. ..... 9/6

### UNSHIELDED TYPE

Air Core Litz Wound Broadcast ⅜in. Former.
Cat. No. TC311—Aerial .. .. 6/4
Cat. No. TC312—R.F. .. .. .. 6/4
Cat. No. TC313—Oscillator, 465 k.c. 6/4

# COILS — FORMERS

## "OXFORD" T.R.F. COILS



These Coils have been developed for constructors wanting low-priced yet well-made T.R.F. Coils. Wound with enamelled wire on bakelite former 1¼in. diam.

Cat. No.
TC530—Aerial **3/3**
TC531—R.F. **3/3**
TC532—R.F. With Reaction. **3/9**

## SURPLUS WAR STOCKS

I.F. Transformers and Coils, removed from NEW ZC1 Army Transceivers. In perfect working order. Never used.

### I.F. TRANSFORMERS

Best I.F.S. ever made. Made under strict supervision. 465 k.c. Iron Core Type. In cans, complete with slug type Trimmers. Dimensions of can: 3⅜in. high x 1⅜in. x 1⅜in.

Cat. No. TX1006—1st I.F. **7/11** ea.

Cat. No. TX1007—2nd I.F. **7/11** ea.

### SHORT WAVE RECEIVING COILS — AERIAL

Wound on ½in. diam. former. 465 k.c. Iron Core. Fitted on to mounting terminal base. Lug connections. Shielded in can. Dimensions: 3in. high x 1⅜in. x 1⅜in. 4 to 8 M.C.

Cat. No. TX1003 .. **1/6** each

OSCILLATOR COILS

Similar details as above. Air Core.—Cat. No. TX1005 **1/6** each

R.F. INTERSTAGE COILS

Similar details to above Aerial Coils.

Cat. No. TX1004 .. **1/6** each

### B.F.O. COILS

For use with 465 I.F. Transformers and complete with .0001 and .0005 mfd. 5 per cent. Tolerance Mica Condensers. Shielded in can. Dimensions: 2in. high x 1⅜in. x 1⅜in.

Cat. No. TX1002 .. **3/6** each

### P.A. TANK COILS

Unshielded Coils covering approximately 2 to 4 megs. (Low frequency). Wound on ⅞in. former.

Cat. No. TX1034 .. **11½**D. each

Ditto, High Frequency. Covering approximately 4 to 8 megs.

Cat. No. TX1035 . **11½**D. each

### DRIVER TUNING COILS

Driver Tuning Coils (ZC1). 4 to 8 M.C.

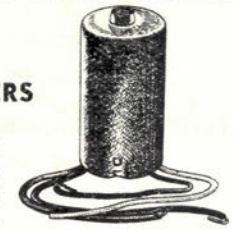
Cat. No. TX1087 .. **2/6** each

### AERIAL LOADING COILS

Wound on 4¾in. long x 2in. diam. Ribbed ebonite former.

Cat. No. TX1092 .. **1/6** each

## MIDGET I.F. TRANSFORMERS



Measuring only 2in. high x 1⅜in. diameter, the "Economy" Midget I.F. is ideal for the miniature portable receiver. Permeability tuned. Wound on Polystyrene Former; 2 pye: 465 k.c. Noise to signal ratio excellent. Aluminium can.

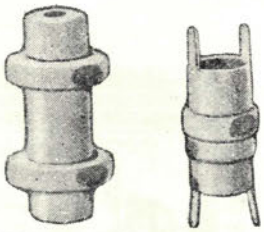
Cat. No. TC524 .. .. **16/6** each

## CRYSTAL SET COILS

COILS FOR CRYSTAL SETS. Consist of 70 turns, 24-gauge D.C.C. Wire on 3in. diam. bakelite former. Tapped every tenth turn.

Cat. No. TC266 .. .. .. **4/-** each

## "ECONOMY" I.F. BOBBINS

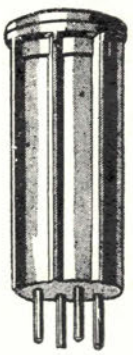


Cat. No. TC527—465 K.C. Air Core **4/6**

## "COIL FORMER"

This Former Tube for coil winding has very high insulating properties, the surface being made of pure bakelite.

| Cat. No. | | Each |
|---|---|---|
| TF78— | ½in. diam., 6in. lengths .. | 1/– |
| TF80— | 1in. dia., 6in. lengths .. | 1/3 |
| TF81— | 1⅛in. dia., 6in. lengths .. | 1/10 |
| TF81A— | 1⅛in. dia., 3in. lengths .. | 1/- |
| TF83— | 1⅜in. dia., 6in. lengths (valve base size) .. | 2/3 |
| TF86— | 2in. dia., 6in. lengths .. | 2/3 |
| TF87— | 2⅜in. dia., 6in. lengths .. | 2/4 |
| TF88— | 3in. dia., 5in. lengths .. | 2/1 |



## "PLUG-IN" COIL FORMERS

Coil Formers for winding short-wave plug-in coils. Eight-ribbed bakelite. Well made. 1⅛in. diameter.

Cat. No. TF55 — 4-pin Plug-in Former **3/6** ea.

Cat. No. TF56 — 5-pin Plug-in Former **3/6** ea.

Cat. No. TF57 — 6-pin Plug-in Former **4/-** ea.

## HIKER'S ONE COILS

Ready wound coils for the famous Hiker's One sets.

Cat. No. TC362 .. .. **3/9** each

## COIL BASES

Used for finishing Coil Windings and for connecting to the wiring of the Set. Provided with 4 lug Terminals. Mounting holes 1⅛in. apart. (Centres.)

Cat. No. TC529 .. .. .. **2**D. each

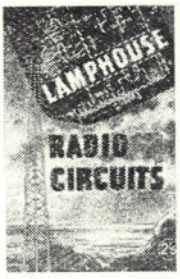
## "LAMPHOUSE" INSTRUCTION COURSE

A 48-page, attractively covered booklet containing a simple yet most thorough Radio Course. Compiled from previous Lamphouse publications, revised and rewritten in simple, everyday language, for those enthusiasts starting out in Radio as a hobby or a career. Questions and answers given on each chapter.

Cat. No. TB101 .. .. **2/6** Copy

POSTAGE 1d. extra.

## "LAMPHOUSE" CIRCUIT BOOK



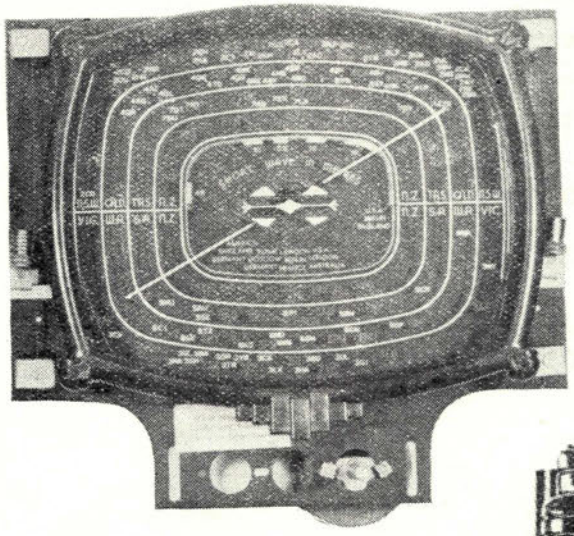

An 80-page booklet containing nearly 200 different Circuits. Circuits of all types, from Crystal Sets to a 26 Valve De Luxe Receiver. Amplifiers, power packs, electric fence units, testing equipment, short-wave converters, wave traps, oscillator, aerial system—in short, a Circuit to meet every requirement. Schematic diagrams only are given and not constructional details.—Cat. No. TB100 ..

(POSTAGE 1d. EXTRA) **2/6** copy

# 3 super de luxe DIALS

*(Australian made)*

**Three high quality Dials, designed by Australia's leading Dial manufacturers for those who want a first-class article at a reasonable price. All are calibrated for New Zealand, Australian and Shortwave Stations and matched to the Plessey type "K" 3-gang condenser (440 mmfd.) Dial Shaft, ¼in.**



A popular size for 5 or 6 valvers. Attractive colour toning. Glass scale is mounted against a black background. Station markings are in Green and Orange with Ivory trimmings. Fancy brown mottled Escutcheons, two Dial Lightholders for edge lighting. Maximum measurements for Visual Dial face. Length, 8in.; Depth, 6½in. Overall dimensions of frame: Length, 10in.; Depth, 9¼in.

Cat. No. TD120 .. .. .. .. .. .. **52/6**

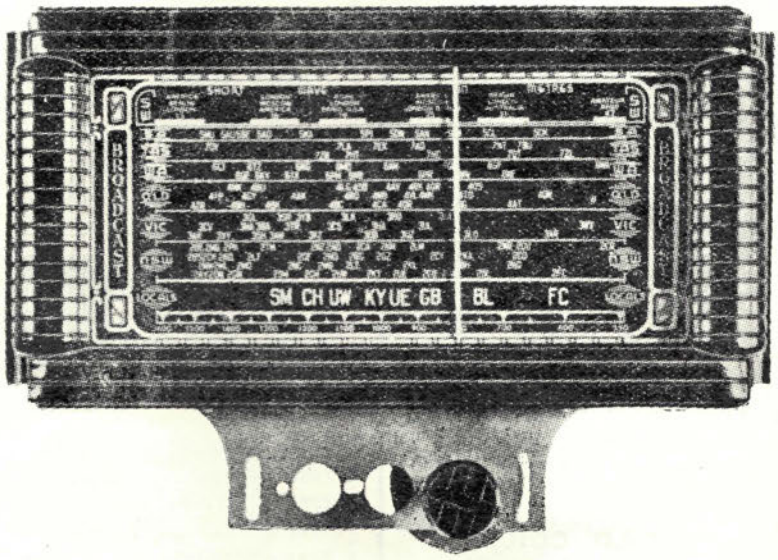
A BEAUTIFULLY MANUFACTURED DIAL WITH A LINED, MOTTLED BROWN PLASTIC ESCUTCHEON.

Glass scale is mounted against a brown background and coloured as follows:—Orange, designing colour; White and Yellow, station markings

2 Dial Light Holders for Edge Lighting are mounted.

Visual Dial face measures: Length, 10in.; Depth, 5in. Overall Dimensions of Frame: Length, 12in. Depth, 8in.

Cat. No. TD122 .. .. **67/6**




**A DE LUXE SPECIAL FOR A CONSOLE CABINET**

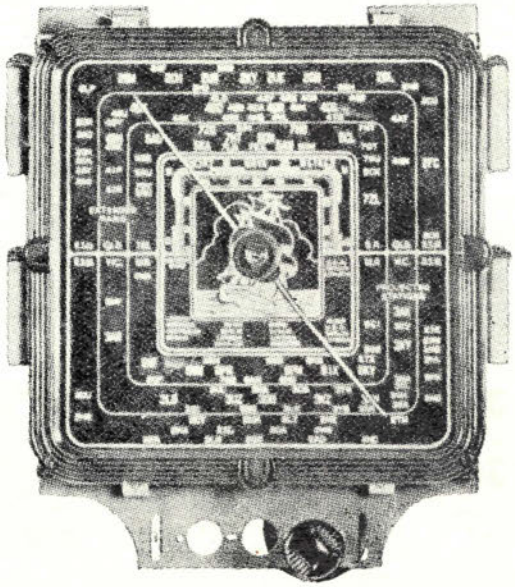
ITS SIZE WOULD MAKE IT AN ADMIRABLE DESIGN FOR THE LARGER CLASS OF RADIO

Visual Dial face measures 8in. x 8in. Overall dimensions are: Length, 10½in.; Depth, 11½in.

Colour scheme is as follows: Background—Black. Station markings—Green, Orange and Ivory. Trimmings in Orange and Ivory.

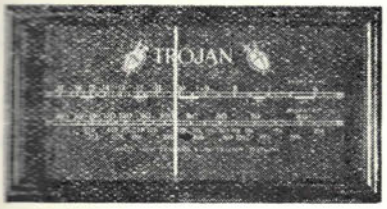
Grooved brown mottled bakelite Escutcheon. Space for Four Dial Lights.

Cat. No. TD121 .. .. .. .. .. **67/6**



**DIALS PURCHASED AFTER 1st SEPTEMBER, 1948, WILL BE CALIBRATED WITH THE NEW STATION POSITIONS.**

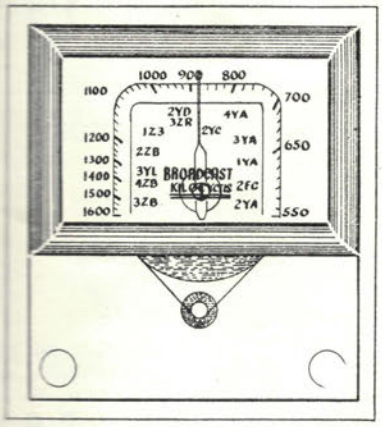
## "TROJAN" DIALS




"TROJAN" SLIDE RULE TYPE DIAL. Attractive glass scale for edge lighting. Dual wave, size 7in. by 4in.; for both clockwise and anti-clockwise use. Lettering in Green colour, scale Yellow, and background Black; ⅜in. Bushing. Complete with Escutcheon.

Cat. No. TD101 .. .. **26/-** each

## "OXFORD" BROADCAST DIALS




Small Broadcast Dials; ideal for Portables and small receivers. Marked in Kilo Cycles 550–1600. Station markings also given. Lettering in green colouring and scale in red.

⅜in. Bushing for Condenser. Bracket for Dial Lamp. Size 3½in. by 2in. For Clockwise Rotation.

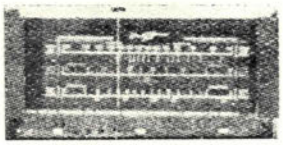
Cat. No. TD103 .. .. **17/6** each

## WAR BARGAINS!

### Z.C.1 TRANSCEIVER DIALS

Dials as used in the sender and receiver sections of Z.C.1's. Can be set for two preset frequencies, with flick tuning mechanism. Diameter of dial, 4in.; diameter of hand-grip instrument knob, 2½in.—Cat. No. TX1090/4 **4/-** each

## "Q" DIALS



DUAL WAVE.

A handsome and well-constructed horizontal slide-rule dual-wave Dial, finished in crackle black and cadmium plate. The Dial is fitted with FLY-WHEEL type SPIN TUNING and is edge lit. Approximate outside dimensions 11in. x. 6in. The Dial Glass is printed in two colours and calibrated to match the Plessey type 1842/11 Condensers (440 to 480 Mmfd.).

Cat. No. TD106 .. .. .. **58/4**

TRIPLE WAVE.

Similar description to above but fitted with Triple-Wave Scale. Dial Glass is printed in three colours.

Cat. No. TD107 .. .. **58/11**

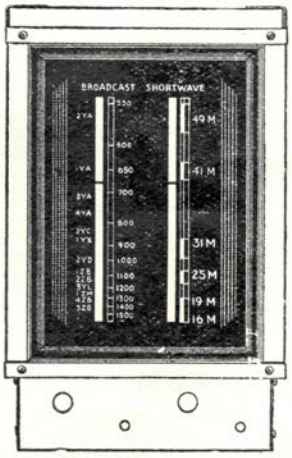
BROADCAST.

A small Dial of similar design and construction to the Dual Wave type described above but not incorporating SPIN TUNING. Outside measurements: 6¾in. x 5in. The Dial Glass is single colour. Calibrated to match the Plessey type 9372/L27 Condenser.

Cat. No. TD105 .. .. .. **47/6**

## "OXFORD" 3 COLOUR DIALS

### Another Addition to our Dial Range!




THREE COLOURS—Yellow, Green, White.

DUAL WAVE — VERTICAL MOUNTING.

*Dimensions*—

| | |
|---|---|
| Overall .. .. | 10½in. x 6¾in. |
| Face .. .. | 7½in. x 5½in. |
| Escutcheon Inside .. | 6⅜in. x 4⅜in. |

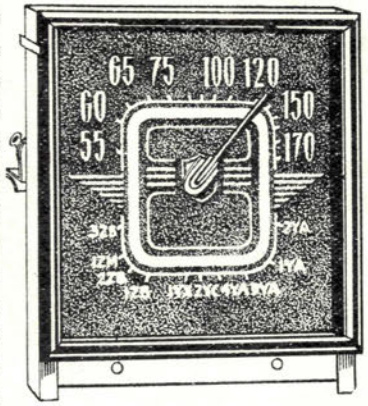
Spin Drive. Details given with each Dial simplify mounting. The whole job is Cadmium plated and is really a finished article.

This is the same Dial as is used on the popular "EASY BUILT 5" RECEIVER.

Cat. No. TD102 .. .. .. **42/6**

THEY'RE REAL VALUE AT THE PRICE!

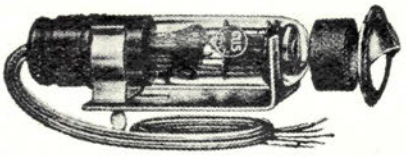
## "SKY-KING" BROADCAST DIAL




A really first-class Broadcast Dial, ideal for the smaller class of set, such as a Portable or small Electric, or Battery Radio. Logged in Kilocycles between 550 and 1700. Station markings also given. Tracks with a 420/480 gang ⅜in. shaft; anti-clockwise rotation. Size: 4in. x 4in. COLOURING: A 3-colour Glass Scale incorporating the following: Brown, Yellow, White and Green. Escutcheon in Brown. 2 Dial Lightholders provided for flood lighting. Well designed throughout.

Cat. No. TD115 .. .. **25/-**

## MAGIC EYE ASSEMBLY



For 6-prong Tubes. An easy method of adapting a Magic Eye or Electron Ray Tube to any standard radio receiver having a.v.c., or any Frequency Modulated receiver. Also used extensively for installing Magic Eyes as indicators in test instruments such as signal tracers, condenser testers, etc.

The metal encased socket is completely wired with a 5-wire colour-coded cable 22in. in length. The necessary 1-megohm target-to-plate resistor is concealed and protected by the socket's metal shell.

Complete set of parts, without valve.

Cat. No. TS495 .. .. .. **10/6**

## SPARE DIAL SCALES

Spare Glass Faces for the above Dials.

TROJAN DUAL WAVE: 7in. x 3½in.—

Cat. No. TR110 .. .. .. **6/6**

"OXFORD" BROADCAST: ANTI-CLOCKWISE ROTATION. Facing glass, 550 kc., left-hand side.

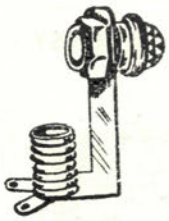
Cat. No. TD111 .. .. .. **3/9**

CLOCKWISE ROTATION. Facing glass, 1800 k.c., left-hand side.

Cat. No. TD112 .. .. .. **3/9**

**NOTE.—All Dials sold after 1st September, 1948, will be calibrated with the new station positions.**

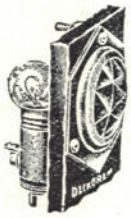
## PILOT LIGHT BRACKET



Red ruby jewel. Two lugs insulated from bracket. Jewel fits into 7-16in. panel hole.

Cat. No. TD500— **2/-** each

## RUBY WINDOW BRACKET FITTING

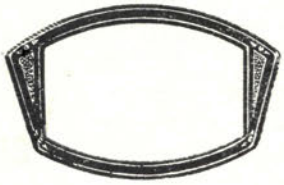


An inexpensive accessory, comprising nickel-plated bezel with ruby lens and bulb-holder. Fixed by 3 screws provided. Takes all M.E.S. bulbs.

Cat. No. TD501 **5/6** each

## ESCUTCHEONS

PRICES REDUCED BY HALF



Oval shape. Black bakelite. Outside measurements 8¾ x 7½; Inside, 6¾ x 5½.

Cat. No. TD200 .. .. **1/3** each

(Glasses for above—TD201, 1/- each)

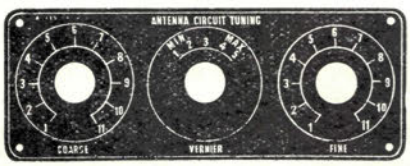
Round Black Bakelite. Outside diam. 5¾ in. Inside 4¼in.

Cat. No. TD206— **1/3** each

## OCTAGONAL ESCUTCHEONS

Square Brown Bakelite type, with Octagonal opening. Overall dimensions: 4¾in. x 4¾in. Opening is 3¾in.—Cat. No. TD218 .. **1/3**

## TUNING SCALE PLATES




Tuning Scale Plates, 6in. x 2¼in. Brown plate with white markings. ⅜in. Control holes.

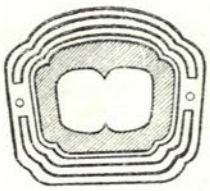
Cat. No. TD34—Were 4/- Now **1/-**

## KNOB FELTS

Felt Circles, for fitting between control knobs and cabinet of Radio Sets. Outside diameter ¾in. with ¼in. hole.

Cat. No. TD25 .. .. .. **1**D. each

## ESCUTCHEON



Dial Escutcheon for disc drive dials. Maximum measurements, 1¾in. wide by 1¼in. high. Size of hole, ¾in. x 11/16in. Florentine bronze finish.

Cat. No. TD219 .. .. **1/-** each

## KNOBS

The Knobs illustrated are neat designs on bakelite, with hole for ¼in. shaft. Best make, with brass inset.

Round Knob, 1in. diam., walnut finish.

Cat. No. TD15. **1/2** each

Similar Knob, smaller diameter.

Cat. No. TD16 **1/1** each

Floral Knob, mahogany colour.

Cat. No. TD13— **1/-** each

HEXAGONAL SHAPE KNOB

Walnut finish.

Cat. No. TD8 **11**D

## ALMOST A GIFT

Yes, almost a gift at the price. These knobs have been removed from Surplus War Equipment, have a metal inset to take a ¼in. shaft, are manufactured from black bakelite and are a semi-pointer type. Diameter, ⅞in.; height, ⅞in.

We are heavily stocked, so they're yours at—

Cat. No. TD17 **4**D ea.

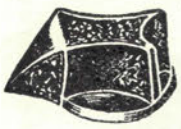
## DIAL PLATE

Indicator Plates, engraved from 0 to 10 degrees. Diameter 1¾in., hole ¼in.

Cat. No. TD341 **2/8**

(Suitable Pointer Knobs are—Cat. No. TD6—9d. each.)

## POINTER KNOBS AT BARGAIN PRICES



Small Pointer Knobs. Black bakelite indicator type Knobs. Hole for ¼in. shaft. Brass inset.

Cat. No. TD6 — Small Pointer. **9**D. each

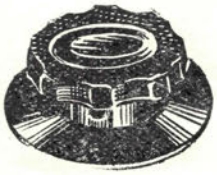
## BAKELITE POINTER KNOBS

Ideal knobs for analyser, test equipment, for all types of transceivers, and electrical and radio test equipment. Hole for ¼in. diam. shafts. Black finish with engraved white line through centre of pointer.

Cat. No. TD46—2¼in. .. **1/9** each

Cat. No. TD45—1¾in. .. **9**D. each

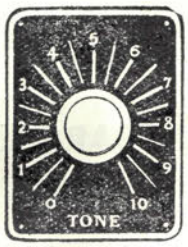
## INSTRUMENT KNOB



Black Moulded Instrument Knob, fits ¼ in. shaft. Metal inset. (Knobs are slightly damaged.) Fixed by grub screw. Diam. 2in.

Cat. No. TD5 .. .. .. **2/9** each

## INDICATOR PLATES




Metal Indicator Plates marked 0/10 with 20 divisions. Size 1⅞in. x 2¼in.

Cat. No. TD33 .. .. .. **2/-** each

(Suitable Pointer Knobs are Cat. No. TD6, 9d. each.)

## DIAL CORD

Green glazed Cord, suitable for dial restringing.

Cat. No. TD26 .. .. **2**D. yard

## *FREE CIRCULARS*

*We publish periodically Supplements, Stock Bulletins, "Radiograms," etc. Make sure YOUR name is on our Mailing List to receive these.*

# CRYSTAL SETS & PARTS — CABINETS

## BROWN'S ENGLISH HEADPHONES

A really first-class pair of Headphones; comfortable and easily adjustable. All bakelite headpieces. Total impedance 2000 ohms. Fitted with 3ft. flexible cord. Excellent quality reproducers.
Cat. No. TC245 .. .. **26/6** pair

## DYNAMIC HEADPHONES

This dynamic Headset is the last word in phones. In reality 2 miniature loud speakers, 80 ohms. Necessitates the use of a matching transformer to use with ordinary radio or small receivers. Would make a good quality Dynamic Microphone, giving fairly flat response, for the amateur. Pre-amp would be required for this purpose. Supplied complete with flexible cord.
Cat. No. TX1065 .. .. **9/11** pair

Suitable matching Output Transformer.
Cat. No. TX1012 .. .. .. **10/6**

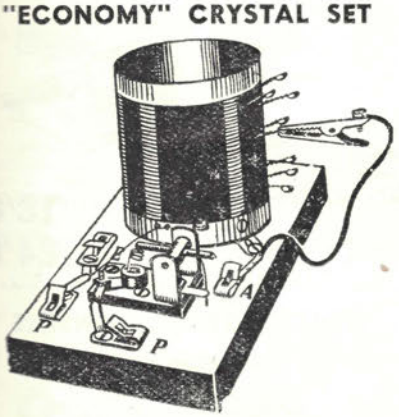
EXCELLENT VALUE AT THE PRICE!
Headphones as above but rewound to 1500 ohms, suitable for use on crystal and other sets without need of a transformer.
Cat. No. TC244 .. .. **17/11** pair

## HEADPHONE CORDS AND SPARES

Headphone Cords, 4 lugs one end, 2 tips the other. 6ft.
Cat. No. TC203 ..... **4/8**

Spare Caps for Brandes Phones.
Cat. No. TC288 .. .. 3/6 each
Spare Diaphrams for Brandes Phones.
Cat. No. TC289 .. .. 1/3 each

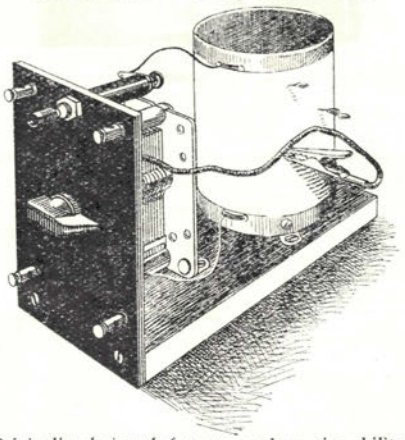
## "ECONOMY" CRYSTAL SET



A very simple and inexpensively designed but efficient Crystal Set, comprising a multi-tapped Coil and Catswhisker type Crystal Detector mounted with Fahnstock Clips on wooden baseboard. Simple in operation. Full instructions enclosed with each.

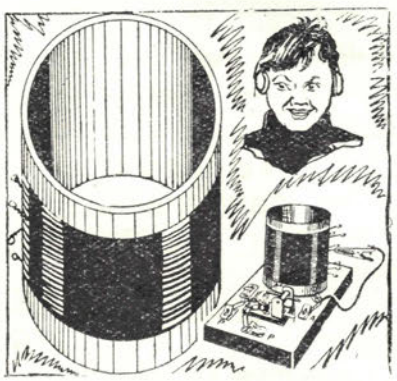
Price does not include Headphones.
Cat. No. TC290 .. .. **14/6** each

## "DIAMOND" CRYSTAL SET



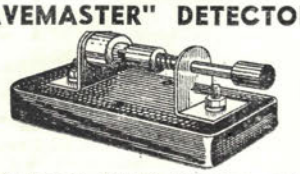
Originally designed for areas where the ability to separate local stations was a prime consideration, these Crystal Sets will be found quite suitable for use in districts at a considerable distance from powerful broadcast stations. Our test model worked well 100 miles away from 2YA's aerial. Complete with instructions.
Cat. No. TC293 .. .. .. **28/6**

## CRYSTAL SET COILS



Coils for Crystal Sets. Consist of 70 turns, 24-gauge D.C.C. Wire on 3in. diam. bakelite former. Tapped every tenth turn.
Cat. No. TC266 .. .. **4/-** each

## "WAVEMASTER" DETECTORS



Semi-Permanent Crystal Detectors, mounted on small black bakelite base. Not enclosed. An English-made Detector that will give excellent reception.—Cat. No. TC257 .. **3/6**

### Catswhisker Type

Similar to those described above but using ordinary catswhisker and crystal.
Cat. No. TC256 .. .. .. **2/11**

## HEADPHONE CUSHIONS

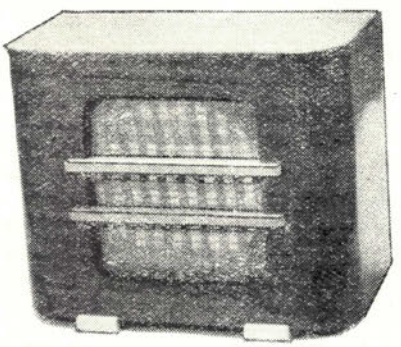
Sponge Rubber Cushions, for TX1065 and TC244 Headphones. Can also be used on other phones with an approx. 3in. diam. earpiece.—Cat. No. TC205 .. **2/-** pair

## CRYSTALS

"LUCERNE" Crystals. Packed in small packets and supplied complete with Catswhisker. British manufacture.
Cat. No. TC268— **10**D. Packet

Galena Crystals, in packets.
Cat. No. TC255 .. .. .. **6**D.
Hertzite Crystals—Cat. No. TC267 .. **1/4**

## "CLASSIC" SPEAKER CABINETS

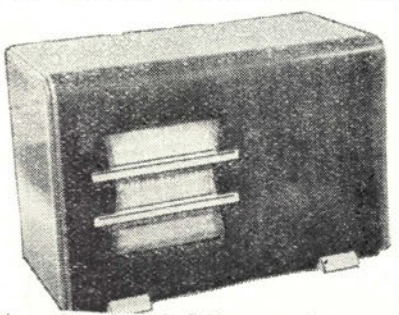


The "Classic" is a well-made, richly-veneered cabinet made for extension speakers or for call-systems which are being used so extensively at present. Will take an 8in. or a 5in. Speaker and are supplied with fawn speaker cloth. Honey coloured trimmings. Dimensions: Length 12in., depth 6½in., height 10in. each
Cat. No. TC151 .. .. **39/6**

## "SUPERIOR" MANTEL CABINET

Similar in construction to the "Peerless" but made slightly larger to take a 6-valve or similar class of set. Space for 5in. to 8in. Speaker. Dimensions: Length 18in., depth 8½in., height 12½in. Cat. No. TC150 .. .. **75/-**

## "COVENTRY" MANTEL CABINET



A modern Mantel Cabinet to take a small broadcast or shortwave receiver. Richly veneered. Well made. Takes 5in. speaker. Dimensions: Length 16in., depth 7½in., height 10in.. Cat. No. TC152 .. .. **65/-**

## "RED DIAMOND" DETECTORS

Red Diamond Detectors are the semi-permanent type. Can be adjusted by moving the plunger. Sensitive, and give good results.
Cat. No. TC254 .. .. .. **6/9**

Spare Pairs of Crystals for Red Diamond Detectors—
Cat. No. TC252 .. .. .. **3/6**

## ELECTROLYTIC CONDENSERS

ELECTROLYTIC CONDENSERS IN ROUND CARDBOARD CONTAINERS.

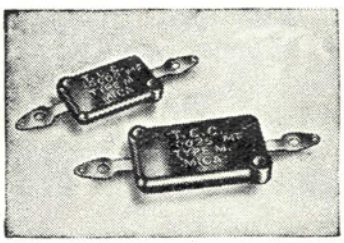
Tubular Type—Dry.

| Cat. No. | Each |
|---|---|
| TC564 —8 mfd. | 5/– |
| TC565—16 mfd. | 7/9 |
| TC570—50 mfd., 25 volt | 3/2 |
| TC571—25 mfd., 35 volt | 3/– |
| TC572—10 mfd., 50 volt | 3/2 |
| TC566—12 v. 500 mfd. | 10/6 |
| TC567—50 mfd. 350 volt | 8/6 |
| TC578—32 mfd., 250 volt | 6/9 |

ELECTROLYTIC CONDENSERS IN METAL CASES.

| Cat. No. | Each |
|---|---|
| TC581—8 mfd. Upright Mounting | 5/– |
| TC562—16 mfd. | 8/9 |
| TC574—10 x 10 mfd. | 7/6 |

## MICA FIXED CONDENSERS



| Cat. No. | Each |
|---|---|
| TC692—.00005 | 1/- |
| TC679—.0001 | 1/- |
| TC680—.0002 | 1/- |
| TC680A—.00025 | 1/- |
| TC681—.0003 | 1/- |
| TC682—.0005 | 1/3 |
| TC683—.001 | 1/3 |
| TC684—.002 | 1/3 |
| TC685—.003 | 2/- |
| TC691—.004 | 2/- |
| TC686—.005 | 2/- |
| TC687—.006 | 2/- |
| TC688—.01 | 2/6 |

## HIGH VOLTAGE CONDENSERS

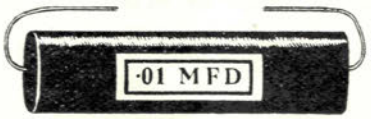
MICA CONDENSERS

Cat. No. TC630 .0005, 1800 volts, Test Mica .... **1/9** ea.

Cat. No. TC632 .005, 1800 volts, Test Mica .... **5/-** ea

Cat. No. TC633 .01 1800 volts, Test Mica **5/2** ea.

## TUBULAR CONDENSERS




Non-Inductive Condensers with wire ends.
350 volts. (Working).

| Cat. No. | each |
|---|---|
| TC672—.01 mfd. | 9d. |
| TC673—.05 mfd. | 9d. |
| TC676—.25 mfd. | 1/– |

600 VOLT WORKING.

| Cat. No. | Each |
|---|---|
| TC700—.0001 | 1/- |
| TC701—.0002 | 1/- |
| TC702—.00025 | 1/- |
| TC703—.0003 | 1/- |
| TC704—.0005 | 1/- |
| TC705—.001 | 1/- |
| TC706—.002 | 1/- |
| TC707—.003 | 1/- |
| TC708—.004 | 1/- |
| TC709—.005 | 1/- |
| TC710—.006 | 1/- |
| TC711—.01 | 1/- |
| TC712—.02 | 1/2 |
| TC712A—.03 | 1/2 |
| TC713—.05 | 1/3 |
| TC714—.1 | 1/3 |
| TC715—.25 | 1/9 |
| TC716—.5 | 1/9 |
| TC717—1 mfd. | 3/- |

## CERAMIC FIXED CONDENSERS

Cat. No. TC660 —5 pfd **9**D. each

Cat. No. TC661—10 pfd **9**D. each

Cat. No. TC662—15 pfd. **9**D. each

## WAR SURPLUS CONDENSERS

The following Condensers have been removed from brand new ZC1 Transceivers:—

Cat. No.
TX1025—10 x 10 mfd. Electrolytics **7/6**

TX1026—10 x 10 mfd. Insulated **7/6**

TUBULAR CONDENSERS.

Cat. No.
TX1027—.02 mfd. 400 volt Tubular Condensers .. **6**D. each

TX1028—.1 mfd. 400 volt Tubular Condensers .. **9**D. each

TX1029—.25 mfd. 400 volt Tubular Condensers .. **1/3** each

TX1030—25 mfd. 25 volt Electrolytic Condensers **1/9** each

PADDERS AND TRIMMERS.

465 K.C. Single Hole mounting type Padders. 1 in. square. Cat. No. TX1031 .. .. **2/-** each

Double Trimmers: Philips make. Low-loss air spaced type, with mounting piece 2in. x ¾in. Cat. No. TX1032 **1/-** each

Aerial Trimmer Condensers: An air-spaced midget variable condenser with a capacity of 25 mmfd. Cat. No. TX1033 .. .. **3/-** each

GANGED CONDENSERS.

Standard 3-gang Condensers, as used in ZC1 Transceivers, ¾in. shaft, complete with mounting brackets and connections. Brand new. Capacity, .000385. Cat. No. TX1095 .. .. **9/6** each

3-gang Condenser complete with ZC1 dial. Half of moving plates of condensers have been removed, making them ideal for short wave work. Approx. capacity .000175 mmfd. Cat. No. TX1008 .. **9/11** each

## PADDERS AND TRIMMERS

Single bank Trimming Condensers, capacity 30 mmfd.

Bakelite Mounted.

Cat. No. TC886— **7**D. each

2 Bank Trimming Condensers Capacity, 30 mmfd. Bakelite mounted. Cat. No. TC887 .. .. **1/5** each

Single Hole MOUNTING PADDERS, 600 mmfd. Isolantite mounting.

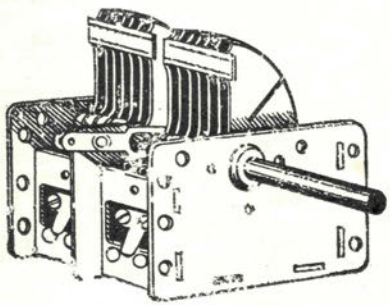
Cat. No. TC889 .. .. .. **3/-** each

Cat. No. TC888—Ditto 1200 mmfd. **2/-** each

I.F. BASES. Double Padders. 120-120. 1⅜in. x 1⅜in. Isolantite mounting.

Cat. No. TC891 .. .. .. **2/-** each

## GANGED CONDENSERS



British-made reliable Condensers will match up with Ensign Coil Kits. ¼in. shafts, anti-clockwise rotation. Capacity .00042.

Cat. No. TC922—2-gang .. .. **17/-**

Cat. No. TC923—3-gang .. .. **18/6**

## "ENSIGN" MIDGET CONDENSERS

Ideal Gang Condensers for miniature portables, etc. Overall dimensions only, Height 1⅝in., Width 1½in., Depth 1¼in.; 1 gang section ⅛in. Capacity, .0 0 0 3 6 5 max., 14 p.f.d. min. Ceramic insulation. Nickel silver contacts.

Cat. No. TC924—2 gang .. .. **18/6**

Cat. No. TC925—3 gang .. .. **24/6**

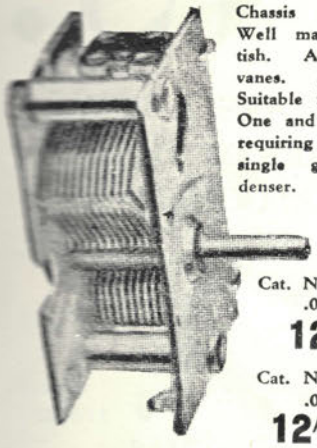
## GENERATOR CONDENSERS

Special Condensers for noise suppression on motor car radio installations, etc. .5mfd. Metal case.

Cat. No. TC637 .. .. **4/3** each

# VARIABLE CONDENSERS

## "ENSIGN" CONDENSERS



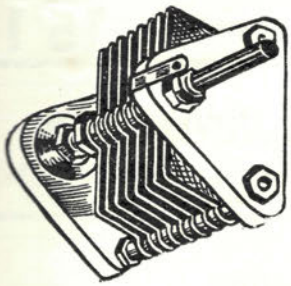
Chassis mounting. Well made. British. Air - spaced vanes. ¼ in. shaft. Suitable for Hiker's One and other sets requiring a good single gang Condenser.

Cat. No. TC914 .0003
**12/4** each

Cat. No. TC915 .0005
**12/10** each

SPECIAL SHORT WAVE TYPE
.00015—Cat. No. TC913 .. **12/3** each

## "ENSIGN" MIDGET CONDENSERS



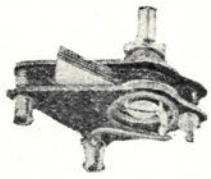
Midget Variable Condensers, 15 plate. Ideal for short-wave work. British make.

Cat. No. TC912 .000065 mmfd. **7/6** each

Cat. No. TC808 .0001 mmfd. **6/6** each

## MIDGET VARIABLE CONDENSERS

Very compact Condensers for constructing small receivers, wave traps, and other apparatus. Solid dielectric type. ¼in. diam. shaft. Overall dimensions, 1⅝in. x 1¼in. x ¼in. thick. Shaft assembly 1in. long.



TC918, .0003— **7/-**

Cat. No. TC919—.0005 .. .. **8/2**

Cat. No. TC920—.0001 .. **6/10** each

## FREIGHT

*We pay Freight on all Retail Orders over £1 value. Please include sufficient cash for postage on small orders.*

# BIG REDUCTIONS!

## "WAVEMASTER" SHORTWAVE MIDGET CONDENSERS

A line of highly efficient variable condensers suitable for all purposes requiring a midget robust condenser. High voltage isolantite insulation. Single bearing mounting with provision for ganging. Unique design of plates ensures straight line frequency tuning and low minimum capacity. Plates are manufactured from best quality brass.

MEASUREMENTS: ¼in. shaft, ⅜in. mounting hole, 2in. wide, 1½in. high and projects 1⅜in. behind panel.

| | Max. Cap. | Min. Cap. | Plates. | Spacing. | Price. |
|---|---|---|---|---|---|
| Cat. No. TC830 | 10 mmfd. | 1 mmfd. | 3 | .057in. | 4/11 |
| „ „ TC834 | 100 „ | 5 „ | 13 | .057in. | 8/3 |
| „ „ TC842 | 110 „ | 5 „ | 13 | .073in. | 9/6 |

NOTE.—Cat. No. TC842 does not have the straight line frequency feature and spacing is greater than other models.

## "Wavemaster" Double Spaced Midget Transmitting Condensers

Similar to the midget variety in all respects except in spacing. This line is ideally suited for use in low power stages of transmitters, etc. An excellent condenser for V.H.F. work.

| | Max. Cap. | Min. Cap. | Plates. | Spacing. | Price. |
|---|---|---|---|---|---|
| Cat. No. TC835 | 8 mmfd. | 1 mmfd. | 3 | .150in. | 4/11 |
| „ „ TC836 | 15 „ | 2 „ | 7 | .150in. | 4/11 |
| „ „ TC837 | 23 „ | 2 „ | 9 | .150in. | 4/11 |
| „ „ TC838 | 30 „ | 3 „ | 11 | .150in. | 4/11 |
| „ „ TC840 | 50 „ | 5 „ | 11 | .110in. | 8/6 |

NOTE.—Cat. No. TC840 does not have the straight line frequency feature and spacing is slightly less than the other models.

## "Wavemaster" Transmitting Condenser

A reasonably priced condenser having both single bearing mounting and rigidity of construction. Plate spacing (.150in.) enables this condenser to be used for a variety of purposes in medium power transmitters. It is admirably suited for ganging, resulting in a popularly priced split stator condenser. Available in one size only (3-50 mmfd.) 13 plate, ¼in. shaft, ⅜in. mounting Hole. Measures 2in. wide, 1½in. high and projects 2¼in. behind panel.

Cat. No. TC841 .. Price **9/10** each

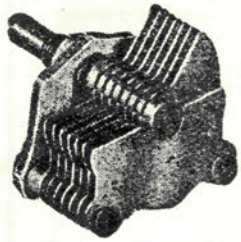
## MIDGET CONDENSERS, R.C.S.

Midget Condensers with high voltage trolitul insulation end pieces, single bearing type.

| Cat. No. | Max. Cap. | Min. Cap. | Plates. | Price. |
|---|---|---|---|---|
| TC809 | Mmfd.10 | Mmfd.3 | 3 | 5/– |
| TC810 | Mmfd.25 | Mmfd.3.5 | 4 | 5/4 |
| TC811 | Mmfd.50 | Mmfd.4 | 7 | 6/3 |
| TC812 | Mmfd.100 | Mmtd.6 | 14 | 7/9 |

R.C.S. MIDGET CONDENSERS

Trolitul high voltage insulation end Pieces and double bearing, suitable for ganging.



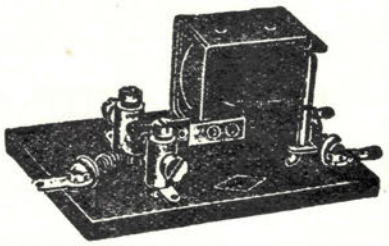
| Cat. No. | Max. Cap. | Min. Cap. | Plates. | Price. |
|---|---|---|---|---|
| TC814 .. | Mmfd. 10 | Mmfd.3 | 2 | 9/3 |
| TC815 .. | Mmfd. 25 | Mmfd.3.5 | 4 | 10/3 |
| TC816 .. | Mmfd. 50 | Mmfd.4 | 7 | 11/9 |
| TC817 .. | Mmfd.100 | Mmfd.6 | 14 | 14/– |

## CONDENSER COUPLINGS

¼in. Bakelite and Metal Flexible Condenser Couplings for ganging two variable condensers. Flexible brass connector on bakelite mount.

Cat. No. TC901 .. .. **2/3** each

## 3P.D.T. AERIAL RELAYS



A sturdily constructed relay which was designed for antenna change-over when using break-in operation on ZC1 Mark 2 Army Transceivers. Similar in constructional details to Key Relay, with the exception that two extra poles have been included. Operation is positive and contacts are easily adjustable. Suitable for any purposes requiring three circuits to be thrown in two positions. 12-volt operation at .1 amp. Measures 3¼in. x 3in. x 1½in.

Cat. No. TX1023 .. .. **13/-**

## S.P.D.T. KEY RELAYS

This unit is designed for operation from 12 volts and draws approx. .08 amps. Relay will operate from voltages as low as 8 volts providing spring tension is decreased. Cadmium plated parts are mounted on bakelite plate, measuring 3¼in. x 1½in. x 2in. overall. A very efficient relay which is suitable for many purposes including aerial changeover for transmitters, remote control of transmitters or receivers, etc.

Cat. No. TX1022 .. .. .. **7/6**

## *OUR GUARANTEE!*

The Lamphouse 7-DAY MONEY BACK GUARANTEE protects your every purchase.

# BARGAINS!

THIS CATALOGUE IS FULL OF BARGAINS. HERE ARE A FEW EXAMPLES PICKED AT RANDOM. FULL PARTICULARS OF THESE LINES ARE GIVEN ELSEWHERE IN THIS CATALOGUE.

**Heavy Rubber Covered LEAD-IN WIRE** Cat. No. TA258. ONLY **1½d** FOOT

**Plastic CHAIN INSULATORS** YOURS FOR **5d** EACH
Cat. No. TA315—WORTH 2/6.

**1500 ohm HEADPHONES** ONLY **17/11** PAIR
Cat. No. TC244.

**GALENA CRYSTALS** **6d** EACH
Cat. No. TC255.

**CRYSTAL DETECTORS** **3/6**
**Permanent Type** Reduced from 5/3 to Cat. No. TC257

**12-Volt 7-pin VIBRATORS** **4/11**
Cat. No. TB65 — 27/6d. WORTH FOR

**465KC Iron Core I.F. TRANSFORMERS** Cat. No. TX1006— FOR **7/11**

**3-GANG CONDENSERS** **9/6**
Cat. No. TX1095. Worth 25/-—YOURS FOR

**MIDGET VARIABLE CONDENSERS**
PRICES SLASHED! SEE PAGE 47.

**VALVES . . .**
**BRAND NEW but not in Cartons.**

| | | |
|---|---|---|
| 6X5GT .. | 4/11 | WAR STOCKS |
| 6V6GT .. | 5/11 | |
| 6U7G .. | 3/6 | |
| 6K8GT .. | 7/11 | |
| 6Q7GT .. | 7/11 | |

**DYNAMIC MICROPHONES** Cat. No. TX1064—EACH **15/11**

**0-100 M.A. MOVING COIL METERS** Cat. No. TX1177— **39/6**

**CRYSTAL PICKUPS** Cat. No. TP307— **35/-**

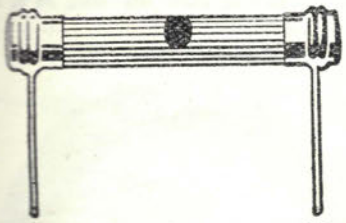
**MORSE PRACTISE SETS** Cat. No. TH110. Were 8/9. NOW **5/11**

**P.V.C. 2-Wire EXTENSION CABLE** Cat. No. TW87A— YARD **6d**

**POINTER KNOBS** Cat. No. TD6— Were 1/-. NOW **9d**

**P.M. SPEAKERS** 5in. Type with Transformers
Cat. No. TS950—EACH **24/11**

## COLOUR CODED RESISTORS



Conservatively rated at 1 watt. They will stand up to 50 per cent. overload without injury. Colour coded to the R.M.A. standard. They are accurate to within 5 per cent. of stated values, which remain constant whether in use or in stock. Perfectly noiseless and completely free from hand capacity effects. All one watt size.

### 1-WATT RESISTORS

| Cat. No. | Ohms. |
|---|---|
| TR210— | 100 |
| TR211— | 200 |
| TR212— | 250 |
| TR213— | 300 |
| TR214— | 400 |
| TR215— | 500 |
| TR216— | 750 |
| TR182— | 1,000 |
| TR183— | 2,000 |
| TR184— | 3,000 |
| TR185— | 4,000 |
| TR186— | 5,000 |
| TR187— | 7,500 |
| TR188— | 10,000 |
| TR189— | 15,000 |
| TR190— | 20,000 |
| TR191— | 25,000 |
| TR192— | 30,000 |
| TR193— | 50,000 |
| TR194— | 75,000 |
| TR195— | 100,000 |
| TR196— | 150,000 |
| TR197— | 200,000 |
| TR198— | 250,000 |
| TR199— | 300,000 |
| TR200— | 500,000 |
| TR201— | 1 megohm |
| TR202— | 2 megohm |
| TR203— | 3 megohm |
| TR204— | 4 megohm |
| TR205— | 5 megohm |
| TR206— | 6 megohm |
| TR207— | 7 megohm |
| TR208— | 8 megohm |
| TR209— | 10 megohm |

ALL **9**D. each.

### ½-WATT RESISTORS

| | |
|---|---|
| TR140— | 50 |
| TR145 | 600 |
| TR146 | 750 |
| TR150— | 1,000 |
| TR151— | 2,000 |
| TR152— | 5,000 |
| TR153— | 10,000 |
| TR154— | 15,000 |
| TR155— | 20,000 |
| TR156— | 25,000 |
| TR157— | 50,000 |
| TR158— | 100,000 |
| TR158A | 150,000 |
| TR159— | 200,000 |
| TR160— | 250,000 |
| TR161— | 300,000 |
| TR162— | 500,000 |
| TR163— | 1 megohm |
| TR164— | 2 megohm |
| TR165— | 3 megohm |
| TR166— | 5 megohm |
| TR171— | 10 megohm |

**8**D. each

### 2-WATT RESISTORS

TR143—200 ohm .. .. .. **1/-**

### VARIABLE RESISTORS

TR29—2,000 ohm. 10-watt .. .. **5/6**

TR56—10,000 ohm, 10-watt .. **6/3**

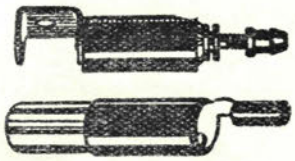
25,000 ohm, 25-watt Variable Resistors. Ruggedly constructed.
Cat. No. TR59 .. .. **5/6** each

### 200 ohm WIRE-WOUND RESISTORS

Special Purchase of these 200 ohm, 150 m.a. wire-wound Resistors enables us to sell at such a low figure.

Cat. No. TR7A .. .. .. **8**D. each

### MOTOR RADIO SUPPRESSORS



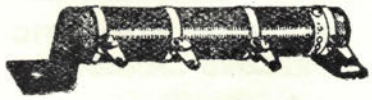
Spark Plug Type (top illustration). A sturdy unit which meets the most exacting demands for spark plug suppression.

Cat. No. TR229 .. .. .. **1/5**

Distributor Type—Cat. No. TR228 .. **1/8**

The above suppressors will not affect power or petrol consumption of your engine.

### R.C.S. VOLTAGE DIVIDERS



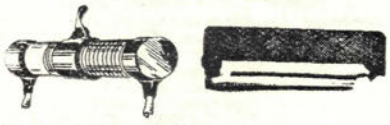
These are wound on tubing ⅜in. in diameter, and the highest grade nichrome wire is used in their winding. The current capacity is 50 M/A. The contact clips are of a special flat type, which, while making perfect contact, do not damage the wire. The total length of the Divider is 4½in., and has two clips.

Cat. No. TR82—15,000 ohms .. **6/9**

Cat. No. TR83—25,000 ohms .. **6/9**

### R.C.S. WIREWOUND RESISTORS

A WELL-MADE ROBUST RESISTOR WITH INNUMERABLE USES.



| | | | |
|---|---|---|---|
| TR41— | 20-ohm, | 2-watt | |
| TR5— | 100-ohm, | 100 | MA |
| TR7— | 200 ,, | 100 | ,, |
| TR8— | 250 ,, | 100 | ,, |
| TR9— | 300 ,, | 100 | ,, |
| TR11— | 400 ,, | 100 | ,, |
| TR13— | 450 ,, | 100 | ,, |
| TR15— | 750 ,, | 100 | ,, |
| TR16— | 1000 ,, | 100 | ,, |
| TR18— | 1500 ,, | 100 | ,, |
| TR19— | 2000 ,, | 50 | ,, |

each **1/2**

TR23—5000 ,, 50 ,, **1/3**

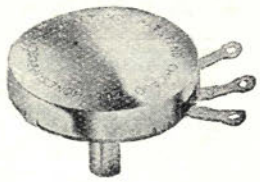
### WIRE-WOUND RESISTORS

Well-known I.R.C. brand Resistors.

| Cat. No. | | Each. |
|---|---|---|
| TR20, | 20 ohm 2w. centre tapped .... | 3/6 |
| TR21, | 50 ohm 2w. centre tapped .... | 3/6 |
| TR22, | 100 ohm, 2w. centre tapped .... | 3/6 |
| TR26, | 1,500 ohm 5-watt wire wound .. | 2/6 |
| TR30, | 200 ohm 10-watt Resistors .... | 3/4 |
| TR31, | 250 ohm 10-watt Resistors .... | 3/4 |
| TR32, | 300 ohm 10-watt Resistors .... | 3/4 |
| TR33, | 400 ohm 10-watt Resistors .... | 3/4 |
| TR34, | 500 ohm 10-watt Resistors .... | 3/4 |
| TR35, | 750 ohm 10-watt Resistors .... | 3/4 |
| TR36, | 1,000 ohm 10 watt Resistors ... | 3/4 |
| TR54, | 5,000 ohm 10-watt Resistors ... | 3/4 |
| TR42— | 10,000 ohm, 2-watt Resistors .. | 1/6 |

### CARBON POTENTIOMETERS

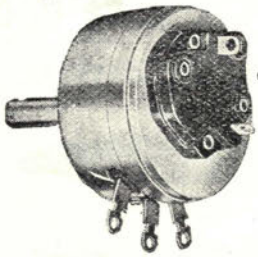
Carbon type employs a full wiping contact between the movable contact member and the hard smooth composition resistance element.



| Cat. No. | Ohms. |
|---|---|
| TP46 | 1,000 |
| TP48— | 5,000 |
| TP49— | 10,000 |
| TP50— | 25,000 |
| TP51— | 50,000 |
| TP52— | 100,000 |
| TP53— | 250,000 |
| TP54— | 500,000 |
| TP55— | 1 megohm |
| TP57— | 2 megohm |

ALL **4/6** EACH

### POTENTIOMETER with Switch



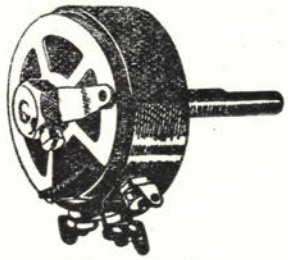
Cat. No. TP64—500,000 ohms, carbon— **6/6** each

### R.C.S. WIRE-WOUND POTENTIOMETERS

Made from moulded bakelite with brass spindles. Nickel-silver contacting ring ensures smooth action, ¼in. diameter shaft.

Cat. No. TP30— 400 ohm, 50 MA .. 6/9
Cat. No. TP31— 1,000 ohm, 35 MA .. 6/9
Cat. No. TP32— 2,500 ohm, 30 MA .. 6/9
Cat. No. TP33— 5,000 ohm, 30 MA .. 6/9
Cat. No. TP24—10,000 ohm, 20 MA .. 6/9

### R.C.S. RHEOSTATS



R.C.S. Rheostats, made from moulded bakelite with brass spindles, ¼in. diam. shaft. Nickel-silver contacting ring ensures smooth action.

Cat. No. TR507—6 ohm .25 amp. .. 6/9 ea.
Cat. No. TR508—10 ohm .25 amp... 6/9 ea.
Cat. No. TR509—20 ohm .25amp. .. 6/9 ea.
Cat. No. TR510—30 ohm .25 amp. .. 6/9 ea.

### ½ MEG POTENTIOMETERS
(FROM WAR TRANSCEIVERS)

500,000 ohm Carbon Potentiometers. 1¼in. diameter—length of shaft 1in.
Cat. No. TX1041 .. .. **3/6** each

# PICKUPS — MOTORS — METERS

## MUSIC HOW YOU LIKE IT!

Arrange your own programmes and have "music as you like it" with a "GOLD-RING" Magnetic Pick-up—The Pick-up that gives Studio-like reproduction to all recordings. Can be connected to practically every make of multi-valve Radio and attached to either a hand-wound or Electric type Gramophone Motor.

Cat. No. TP306 .. .. **£2/19/6**

## THE "ASTATIC" CRYSTAL PICK-UP

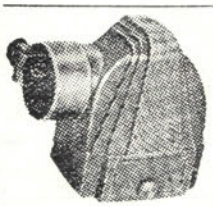
CRYSTAL CLEAR REPRODUCTION CAN BE YOURS WITH AN

**"Astatic" Crystal Pick-up**

—A Pick-up that will give faithful reproduction to all your recordings. Plastic streamlined arm. Can be connected to practically every multi-valve receiver.

Cat. No. TP307 .. .. **35/-**

*WHILE THEY LAST!*

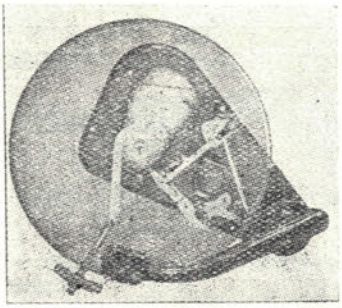


## MAKE YOUR SET A RADIOGRAM!

With a "Gold-Ring" Royal Pick-up Head. Will fit on to the tone arm of practically every make of gramophone. Gives good tone response and low noise level. Light weight on record. Unit contained in moulded plastic case. Complete with 3ft. flex. High output 6000 ohms.

Cat. No. TP203 .. .. .. **45/-**

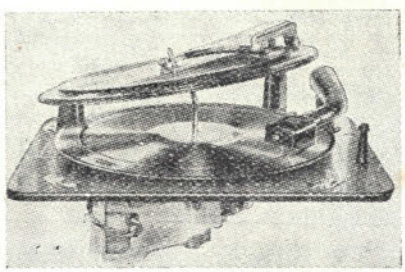
## "GARRARD" RADIOGRAM UNIT



Consisting of an ELECTRIC GRAMOPHONE MOTOR with a Magnetic Pick-up mounted. On-off switch is incorporated in the tone arm and a variable speed regulator is attached to the frame. 230 volt A.C.; 10in. Turntable; Induction Motor. Just plug it into a light socket or power point, connect to your Radio and you play the music you like.

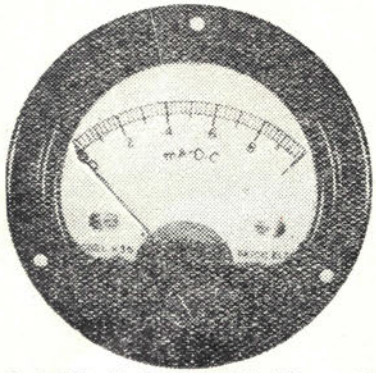
Cat. No. TP300 .. .. **£8/11/6**

## "GARRARD" AUTOMATIC RECORD CHANGER



"GARRARD" Units and Changers are recognised throughout the world as the peak in Radiogram Units. The Electric Motor, Magnetic Pick-up and Automatic Record Changer combined (as illustrated) will take 8 records, either 8in., 10in. or 12in., and play them through from start to finish without any attention whatsoever. Automatic devices lift tone arm from record when finished and place the next disc in position. Complete with full details.—Cat. No. TP301 **£19/11/9**

## 0-1 M.A. METERS



0-1 M.A. Moving Coil D.C. Meters. 1000 ohms per volt. Internal resistance 60 ohms.

DE JUR (U.S.A.), 2½in. Round Scale, 3½in. Outside Diameter.

Cat. No. TM15 .. .. **£2/10/-**

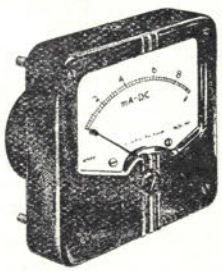
PALEC (Australian), 2½in. Round Scale, 3½in. Outside Diameter. Internal resistance 100 ohms.—Cat. No. TM16 .. **£3/15/-**

## "PALEC" UNIVERSAL SCALE METERS

"PALEC" 0-1 m.a. 2½in. round face Meters, fitted with SPECIAL "UNIVERSAL SCALE" Internal Resistance 100 ohms; 1000 ohms per volt. Reading M.A. and Volts in the following ranges: 0-1, 0-10, 0-100, 0-500, 0-1000; low ohms, 0-500; high ohms, 0-100,000.

Cat. No. TM16A .. .. **£3/19/6**

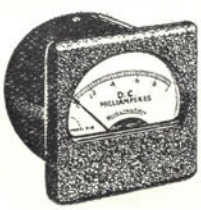
## "PALEC" 4in. SQUARE METERS



"Palec" (Australian) 4in. Square Cased 0-1 m.a. D.C. Meters. Well damped. Easy action. 1000 ohms per volt. 100 ohms internal resistance.

Mounted in moulded plastic case. Accurate and durable. Cat. No. TM400 Reduced to **£3/19/6**

## "BURLINGTON" 0-1 m.a. Meters



3in. Square Bakelite Case "Burlington" (U.S.A.) Meters, 0.1 m.a. D.C. 85 ohms internal resistance; 1000 ohms per volt.

Cat. No. TM17— **59/6** each

## "WESTON" 0-1 M.A. METERS

3in. Square Bakelite cased "Weston" Meters. 0-1 M.A.; D.C.; 105 ohms internal resistance; 1000 ohms per volt.

Cat. No. TM10 .. .. **62/6** each

## Every Experimenter and Serviceman should have one!

Neon Indicator attached to prods.

Here's what it does:

1. Will test any current from 110 v. to 550 v., and will indicate the voltage.
2. Will tell instantly whether A.C. or D.C. current.
3. Will detect live and earth wires.
4. Will give a temporary pilot light on any electrical apparatus.

Cat. No. TM254 .. .. **6/-** each

## METER FUSES

Spare Tubular Fuses for Pifco and other meters.

Cat. No. TM50 .. .. .. **9D.** each

## METER RECTIFIERS

COPPER OXIDE DRY METER RECTIFIERS, originally removed from Army Transceivers. 1 M.A.

Cat. No. TX1015 .. .. **15/-** each

*THEY'RE REAL VALUE AT THE PRICE!*

## METER SHUNTS

Meter Shunts wound for use with 0-1 M.A. Meters, with internal resistance of 100 ohms. Bobbin wound. Accurately adjusted. Length 1½in., Diameter ¾in.

Cat. No. TM70— 25 milliamp
Cat. No. TM71— 50 milliamp
Cat. No. TM72—100 milliamp
Cat. No. TM73—250 milliamp
} **5/-** each

Special sizes may be made to order.

## WAR BARGAIN!
## 0-100 MA Moving Coil Meters

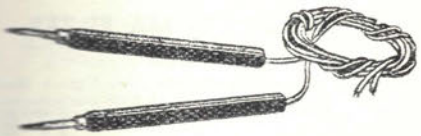
*Removed from ZC1 Transceivers.*

0-100 MA 2in. Meters. 1,000 ohms per volt.

Cat. No. TX1014 .. **35/-** each

# METERS — MICROPHONES

## TEST PRODS



Finished Ebonite Handles and complete with flexible leads.

Cat. No. TM1 .. .. .. **6/-** pair

## FIND THE TROUBLE! with a

# PIFCO "RADIOMETER"

PIFCO goes straight to the heart of the trouble, testing sets and components with equal ease and speed. Any radio set can be tested, either A.C. or D.C. Mains or Battery operated.

Solidly constructed and mounted in a fine bakelite case 4in. x 2⅛in. overall, the Pifco Radiometer has readings for high and low voltage, milliamperes, ohms, continuity test, etc.

THE "ALL-IN-ONE" RADIOMETER is the SHERLOCK HOLMES of Radio—it detects any fault. Anybody can use this wonder instrument. Size of dial 1⅞in. x ⅝in. Supplied complete with leads.—Cat. No. TM103 .. **52/6**

## "EAGLE" HYDROMETERS

Eagle full size glass tube type, with non-sticking float. Test your own batteries.

Cat. No. TM300 .. .. .. **7/6**

SPARE FLOATS—Cat. No. TM301 .. **2/3**

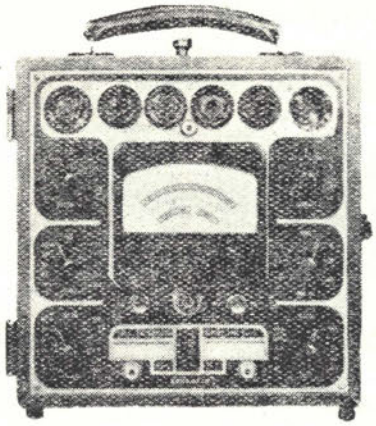
## WAR SURPLUS BARGAIN!

0/100 MOVING COIL MILLIAMP METERS. Brand new, never even been connected. Made by De Jur. Basically a 0/1 MA meter with an easy, removable shunt across the terminals. Black moulded case. Clean round dial.

Worth 80/-.

Cat. No. TX1177 .. .. **39/6**

## THE "RADAMETA" VALVE-TESTER AND MULTI-METER



We have just landed a small consignment of the "RADAMETA" Mutual Conductance VALVE TESTER AND MULTI-METER.

This Tester is a modern instrument, featuring a Roller-Chart Dial.

Tests modern Octal-based Tubes. Multi-Meter reads over 21 ranges.

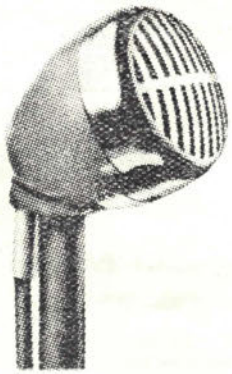
IT'S PORTABLE! WEIGHS ONLY 13lb.

Four ranges milliamperes 0/1, 0/10, 0/50, 0/250. Three ranges ohms 0/500, 0/50,000, 0/10 megohms. Five ranges D.C. volts (1000 O.P.V.), 0/10, 0/50, 0/250, 0/500, 0/1000. Five ranges A.C. volts (1000 O.P.V.) 0/10, 0/50, 0/250, 0/500, 0/1000, (all at 50 cycles). Five ranges output volts at 400 cycles, 0/10, 0/50, 0/250, 0/500, 0/1000. Three ranges electrolytic and paper condenser tests. Line check for 240 volts A.C., 50 cycles.

Inter-element shorts test on all valves. Transconductance test on valves direct reading in MA/V. Emission test on rectifier and diode valves. Gas test on all types of valves tested by transconductance method. Current consumption 240 v. 50 cycle 40 watts. 6 volt D.C., 2 amps.

Cat. No. TM405 .. .. .. .. .. .. .. .. **£43/10/-**

## "SHURE" CRYSTAL MICROPHONES



A good, sturdy Microphone at low cost. Attractive, modern die cast case, finished in iridescent grey, with chrome plated trimmings. Gives natural life-like reproduction. Complete with 7ft. cable and spring connector; ⅝in. female thread; diameter 2⅝in. Without stand.

Cat. No. TM105 .. .. .. **£6**

## METERS

Limited quantities of the following Meters are available from stock. All flush panel mounting. Order early!

Cat. No.

TM803—Burlington 0-25 M.A. Sq. 3in. D.C. Meters.

TM804—Burlington 0-50 M.A. Sq. 3in. D.C. Meters.

TM808—Electro-Tec 0-1 amp. Rnd. 3½in. D.C. Meters.

TM809—Burlington 0-100 M.A. Square, 3in. D.C. Meters.

TM805—Palec 0/1000 M.A. 3½ Round Meters.

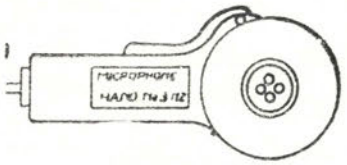
ALL **39/6** each

TM811—Triplett 0-1.5 amp. 3in. Square R.F. Thermo Ammeters .. **£3/10/-**

TM812—Simpson 0-2 amp. 3½in. round R.F. Thermo Ammeters .. **£3/10/-**

## WAR SURPLUS

### CARBON HAND MICROPHONES




A solidly constructed Hand Type Microphone, featuring a press switch mounted in the handle. Complete with 6ft. flex and heavy line plug. (Phone Plug). Unit is enclosed in a heavy bakelite case. This Microphone is suitable for telephone amateur radio work and any similar purpose requiring a sturdy "mike."—Cat. No. TX1063 .. **10/-** each

### DYNAMIC HAND MICROPHONES

Similar in physical construction and appearance to the above (No. TX1063). Has lower output than the Carbon type and therefore requires the use of the Microphone Input Transformer listed below. This "Mike" gives better response than the Carbon type.

Cat. No. TX1064 .. .. **15/11**

MICROPHONE TRANSFORMERS, for use with above. **10/6** each

Cat. No. TX1013 .. ..

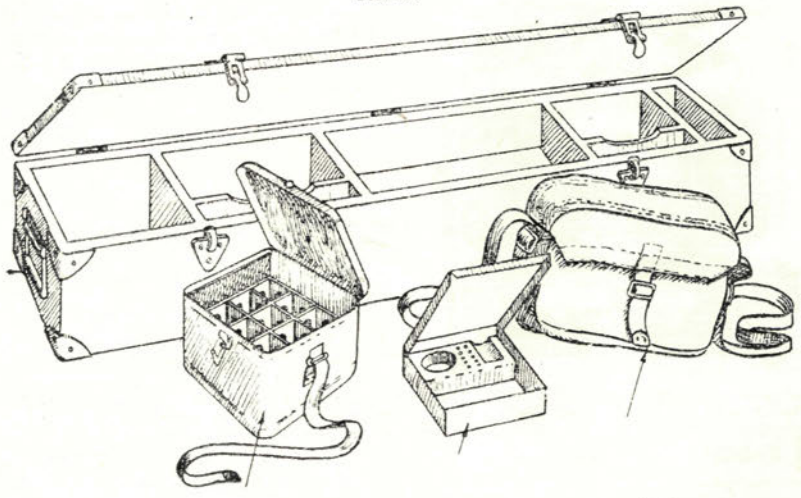
### *The "LAMPHOUSE" Guarantee*

*Any goods that prove in any way unsuitable may be returned undamaged within seven days from receipt and your money will be refunded in full.*

# WAR SURPLUS BARGAINS

## CASES AND HAVERSACKS

TX1077



TX1084 TX1066 TX1059

## WOODEN TOOL BOXES

Exceptionally strong wooden boxes, suitable for tools, etc. Partitions can be easily removed if not required. Patent heavy clamp fasteners. Carrying handles, and metal corner pieces.

Size 42in. x 8in. x 7in. Only **15/11** Each
Cat. No. TX1077 ..

## SPARE PARTS BOXES

A small metal box measuring 6in. x 6in. x 1¾in. Suitable for many purposes in the home workshop.
Cat. No. TX1066 .. .. **1/-** each

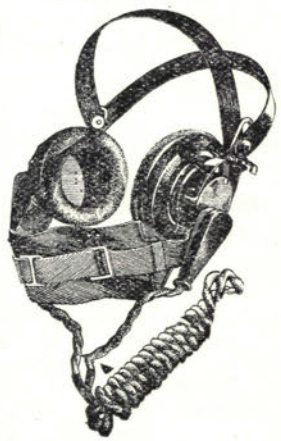
## SPARE VALVE BOXES

A heavy gauge Steel Box measuring 6¼in. x 6¼in. x 6in., divided into 9 compartments each measuring 1¾in. square. Each compartment rubber-cushioned. Complete with carrying handle and vibration-proof-catch.
Cat. No. TX1084 .. .. **5/6** each

## HAVERSACKS

Made from heavy quality reinforced waterproof canvas. Ideal for lunch bags, tool kits, etc. 11in. x 7in. x 3in.
Cat. No. TX1059 .. .. **5/-** each

## HEADPHONES



Double Dynamic Headphones, capable of excellent reproduction. Have impedance of 75 ohms. Should be used in conjunction with an output transformer.
Cat. No. TX1065 .. .. **9/11** Pair

## HEADPHONE OUTPUT TRANSFORMERS

Designed for matching Dynamic Headphones (see above) to Radio Sets. Mounted in 1¾in. square can and employing lug type connections.
Cat. No. TX1012 .. .. **10/6** each

## ZC1 PARTS

*Bargains from dismantled ZC1 Transceivers. All parts are brand new, although some of them may have solder marks on connecting lugs, etc. ORDER EARLY!*

## WAVE CHANGE SWITCHES

3-Bank, 2-Position, 9-Pole Wave Change Switches as used in these Transceivers for Receiver/Band/C.W. Switch.
Cat. No. TX1016 .. .. **4/6** each

2-Bank, 3-Position, 4-Pole Wave Change Switches as used for normal/net/remote switch.
Cat. No. TX1017 .. .. **3/-** each

3-Bank, 3-Position, 6-Pole Wave Change Switches.
Cat. No. TX1018 .. .. **4/6** each

## PARASITIC CHOKES

The ideal Unit for preventing parasites in low and medium power Transmitters. 3¼in. x ¼in.
Cat. No. TX1047 .. .. **1/-** each

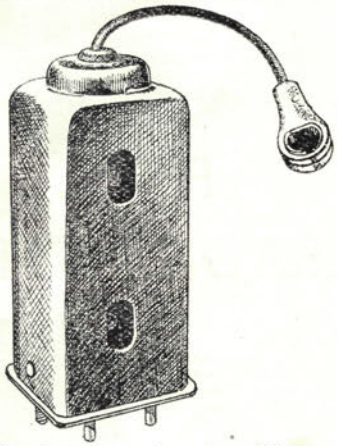
## 2.5 M.H. CHOKES

4 Section 2.5 MH Pyewound Chokes; 2 end connecting leads cut rather short.
Cat. No. TX1047A .. .. **1/3** each

## 30 HENRY 100 MA FILTER CHOKES

Mounted in metal containers 2in. high x 3in. between mounting holes. Lug type connections.
Cat. No. TX1010 .. .. .. **17/6**

## I.F. TRANSFORMERS

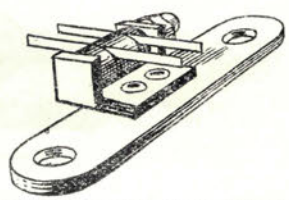


Each Transformer tested under rigid army supervision. The finest money can buy, and only half the price of ordinary I.F.S. 465 k.c. Iron Cored.
Cat. No. TX1006—No. 1 I.F. .. **7/11** each
Cat. No. TX1007—No. 2 I.F. .. **7/11** each

## M.A. METERS

Made by De Jur. 0/1 M.A. movement with 100 M.A. external shunt. Suitable for use as millimeters when used with shunts, etc., 2½in. diam. 1000 ohms per volt.
Cat. No. TX1014 .. .. **35/-** each

## METER RECTIFIERS



COPPER OXIDE DRY METER RECTIFIERS.
1 M.A.
Cat. No. TX1015 .. .. **15/-** each

## ELECTROLYTICS

10 x 10 Mfd. Electrolytic Condensers, mounted in 1in. diameter x 2¼in. high Metal can with mounting flange. Lug connections.
Cat. No. TX1025 .. .. **7/6** each

Similar to above but insulated from Chassis:
Cat. No. TX1026 .. .. **7/6** each

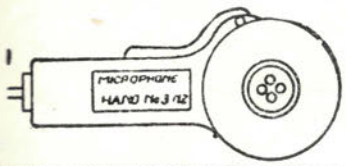
## AMPHENOL OCTAL VALVE SOCKETS

These Sockets are the ring mounting variety and are new with the exception of being soldered.
Cat. No. TX1048 .. .. **4D.** each

# WAR SURPLUS BARGAINS

## MICROPHONES

### CARBON HAND MICROPHONES




A solidly constructed Hand Type Microphone, featuring a press switch mounted in the handle. Complete with 6ft. flex. Unit is enclosed in a heavy bakelite case. This Microphone is suitable for telephone amateur radio work and any similar purpose requiring a sturdy "mike."—Cat. No. TX1063 .. **10/-** each

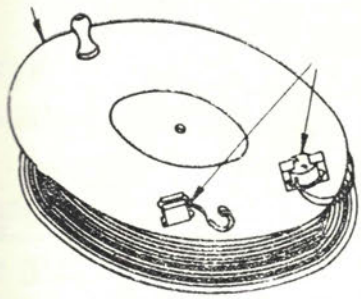
### DYNAMIC HAND MICROPHONES

Similar in physical construction and appearance to the above (No. TX1063). Has lower output than the Carbon type and therefore requires the use of the Microphone Input Transformer listed below. This "Mike" gives better response than the Carbon type.
Cat. No. TX1064 .. **15/11** each

### MICROPHONE INPUT TRANSFORMERS

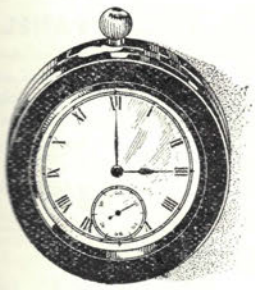
For use with the Dynamic Microphone described above.
Cat. No. TX1013 .. .. .. **10/6**

### FIELD CABLE



Metal Reels, containing approx. 60 yds. Twin Twisted Yellow and Black stranded (6 Iron 1 Copper) flexible Cable. Insulated with plastic P.V.C. Excellent for telephones, bells, etc. etc.
Cat. No. TX1189 .. .. **15/-** each

Metal Reels only; 8¾in. diam.
Cat. No. TX1082 .. .. **1/9** each



### PLASTIC WATCH CASES

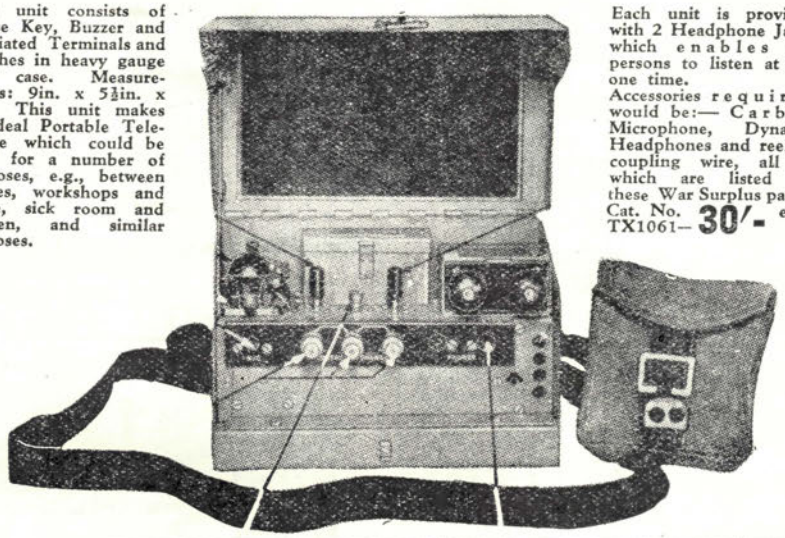
Plastic Watch Cases, 2in. diameter, ¼in. rim round top case, holds watch in position and allows 1¾ in. opening for watch face.

Cat. No. TX1036—(Case only) .. **1/-** each

## REMOTE CONTROL UNITS

### TWO-WAY INTER-COMMUNICATION SETS

This unit consists of Morse Key, Buzzer and associated Terminals and switches in heavy gauge steel case. Measurements: 9in. x 5¾in. x 5in. This unit makes an ideal Portable Telephone which could be used for a number of purposes, e.g., between houses, workshops and office, sick room and kitchen, and similar purposes.



Each unit is provided with 2 Headphone Jacks which enables two persons to listen at the one time.
Accessories required would be:— Carbon Microphone, Dynamic Headphones and reel of coupling wire, all of which are listed on these War Surplus pages.
Cat. No. TX1061— **30/-** each

### 12-VOLT VIBRATOR PACK

A real heavy duty Power supply for that vast field of battery-operated multi-tube Receivers, medium power Public Address Systems and low power Transmitters. Completely enclosed in a heavy metal cadmium-plated box with hash filter. They are ideal for short-wave Receivers. The dimensions are 6in. long by 4in. wide and 6in. deep. Although designed to operate from 12 volt D.C. they can be converted to 6v. The Output is 250 volts at 60 mills. The B Supply, smoothing choke and filter condenser are supplied separately.

12 VOLT POWER PACK—
Cat. No. TX1001 .. .. **£3**

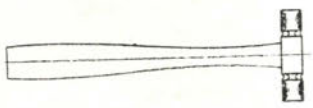
12-volt Transformers, as used in above.
Cat. No. TX1088 .. .. **17/6** each

12-volt Vibrators, as used in above.
Cat. No. TB65 .. .. **4/11** each

### SHIELDED BRAID

5ft. Lengths 13/16in. Shielded Braid.
Cat. No. TX1104 .. .. **1/-** each

### HAMMERS



Engineer's type Hammers. 3½in. x 1in. Head. Handle 13in.
Cat. No. TX1071 .. .. **2/-** each

### PADDERS & TRIMMERS

465 K.C. Single Hole mounting type Padders. 1in. square.
Cat. No. TX1031 .. .. **2/-** each

Double Trimmers: Philip's make. Low-loss air-spaced type, with mounting piece 2in. x ¾in.
Cat. No. TX1032 .. .. **1/-** each

Aerial Trimmer Condensers: An air-spaced midget variable condenser with a capacity of 25 Mmfd.
Cat. No. TX1033 .. .. **3/-** each

### RELAYS

Both the relays below will handle 100 watts R.F. for use in transmitters and will also handle AC voltages. Can be excited from a 12-volt battery, from copper oxide rectified supply or from rectified supply using a Philips 1283 rectifier. Both will operate satisfactorily on 9 volts. Can be recommended for amateur transmitters who wish to remote control their Transmitters.
Single Pole double throw Relay. Resistance 145 ohms, for approx. 12 v. operation. Useful for a keying relay or a relay for switching one circuit.—Cat. No. TX1022 .. .. **7/6**

Three-pole 2-position Relay. Resistance 55 ohms 12 volts. Designed for aerial changeover.—Cat. No. TX1023 .. .. **13/-**

### SASH BRUSHES

Best Quality Sash Brushes. 8¾ inches long.
Cat. No. TX1180 .. .. **1/-** each

### FLUSH MOUNTING SWITCHES

10 amp., 240 volt Flush Mounting Switches. Can be used for ordinary house lighting circuits or for any other purpose where a on-off switch is required.
Cat. No. TX1019 .. .. **1/-** each

### PUSH-TO-TALK SWITCHES

D.P.D.T. Push Switch. Excellent for a meter push switch or for inter-communication work. Depth 3in., width ⅞in.
Cat. No. TX1021 .. .. **2/-** each

### S.P.S.T. TOGGLE SWITCHES

Standard type S.P.S.T. 230-volt 3 amp. Toggle Switch.
Cat. No. TX1020 .. .. **2/3** each

### TINNED COPPER WIRE

50ft. Coils, 22 S.W.G. Bare Copper Wire, for set wiring, etc.
Cat. No. TX1105 .. .. **1/-** each

# WAR SURPLUS!

## "ANDY" LIGHT

This Unit consists of an insulated socket and plug collar, 3in. flexible Swan Neck and Torch Bulb type Lampholder.
Cat. No. TX1042 .. .. **3/6**

## ARMY Z.C.1 TRANSCEIVER AERIALS

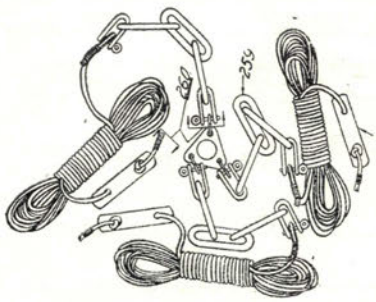
### Excellent as House or Car Aerials

Comprises three 6ft. lengths ⅞in. pipe, four 4ft. lengths copper tubing, size varying from ½in. at one end to ¼in. at the other; set of aerial stays, reducer (for fitting thin section of aerial into heavy section), one rubber socket for heavy section, one rubber socket and insulating condenser for mounting thin (whip) section only. May be used as a vertical house type antenna, or whip section. Could be used as car or caravan aerial. Supplied complete with carrying bags.—Cat. No. TX1085 Price **£2/10/-**

### Whip Section Only

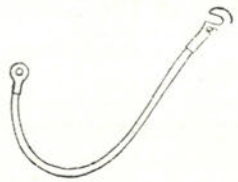
Consists of four 4ft. sections Copper Tubing varying from ⅜in. to ¼in. diameter. These being approx. 16ft. long and light in weight make ideal elements for 10 metre rotary beam antennas, in addition to being suitable for auto, caravan and home use. Complete in canvas bag.—Cat. No. TX1080 .. Price **10/6**

## AERIAL STAY SETS



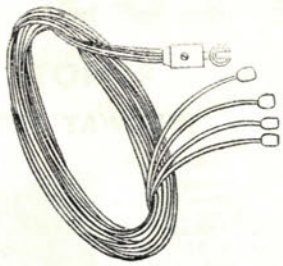
Consists of 3 stays complete with insulators and coupling bracket and are designed for use with the complete 34ft. vertical Mast.
Cat. No. TX1067 .. .. .. **10/-**

## RUBBER-COVERED EARTH LEADS



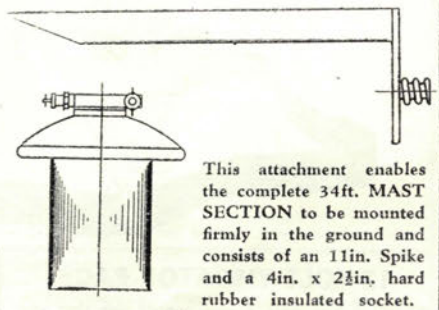
These consist of two 2ft. leads of Single Heavy Core, Rubber covered flex with eyelet type lugs (⅜in. dia.) on one end and heavy spade lugs on the other.
Cat. No. TX1074 .. .. **11½**D. pair

## COUNTERPOISE LEADS



This counterpoise is made up of four 12ft. lengths of rubber-covered flex terminating in a spade lug type junction box.
Cat. No. TX1072 .. .. **2/11** Set

## HEAVY AERIAL MAST BASE



This attachment enables the complete 34ft. MAST SECTION to be mounted firmly in the ground and consists of an 11in. Spike and a 4in. x 2¾in. hard rubber insulated socket.
Cat. No. TX1069 .. .. .. **8/6**

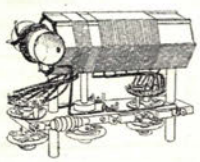
## WHIP AERIAL BASE

This is the attachment for use with the Whip Aerial when mounting on vans, trucks, etc. Consists of a rubber-mounted socket and condenser.—Cat. No. TX1068 .. **12/6**

## STAY PEG SETS

Each set consists of four 9in. Steel Spikes in a reinforced weatherproof canvas carrying bag. Ideal for tent pegs, etc.
Cat. No. TX1070 .. .. **5/-** set

## AERIAL TUNING UNITS



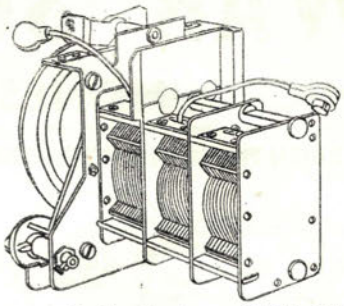
Tank Coil/Tuning Unit; Tank coil consisting of 75 turns double spaced tinned copper wire, 22 gauge; wound on a heavy former 2in. diameter and tapped by means of two single bank 11-position rotary selector switches. Coil and Switches mounted by means of 2 heavy bakelite end pieces, fitting on a cadmium-plated metal bracket.
Cat. No. TX1024 .. .. **10/-** each

Tank Coils only, wound with tinned copper wire on 2in. ribbed ebonite former. Formers are worth three times the price.
Cat. No. TX1092 .. .. **1/6** each

## Z.C.1 INSTRUCTION BOOKS

A 58-page Booklet of working instructions for the Z.C.1, MK. 11 Transceivers.
Cat. No. TX1062 .. .. **1/-** each

## RECEIVER GANG & DIAL UNIT

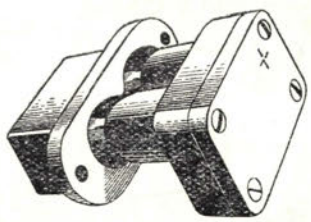


Three-gang Tuning Condenser (192.5 MMFD MAX.) and Dial. Dial has vernier drive with two "click stop" positions. Hand grip 2¼in. Knob. Suitable dial for any type of short wave receiver and lower power transmitter.
Cat. No. TX1008 .. .. .. **9/11**

## TRANSMITTER EXCITER UNIT

Comprises 3-gang Tuning Condenser and Dial as described above, together with Oscillator and Buffer Coils, R.F. Choke, 2-gang Wave Change Switch and associated Resistors and Condensers. Ruggedly constructed Unit—cadmium plated. Both coils are completely shielded and provided with switching to cover from 1.9 to 8 M/c. Unit uses two 6U7G Valves—one as an electron coupled oscillator and one as a single ended buffer. These tubes are not included in the price.
Cat. No. TX1009 .. .. **30/-** each

## HEAVY DUTY CHASSIS PLUG



Exceptionally heavy Power Plug and Socket. Plug is chassis mounting; socket can be attached to cord.
Cat. No. TX1060 .. .. **4/6** set

## RUBBER COVERED GRIP CLIPS

Screen Grid Clips to fit Octal based, glass or metal Valves. Rubber protecting cap moulded over clip. 6in. length of pushback wire attached.—Cat. No. TX1043 .. **3**D. each

## SPECIAL CHASSIS AND PANEL

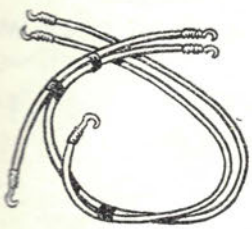
Cadmium Plated Radio Chassis, taken from dismantled Army ZC1 Transceivers. Dimensions 20in. x 8¾in. x 3in. deep; 22 Valve and Coil holes drilled. Space for Tuning Gang and Coil Assembly. Ideal chassis for a communications or a similar receiver.
Cat. No. TX1058 .. .. **12/6** each

## 15 AMP TUBULAR FUSES

Standard 15 amp. Tubular Fuse, suitable for Car or Radio purposes.
Cat. No. TX1046 .. .. **4**D. each

# WAR SURPLUS BARGAINS

## POWER LEADS



Comprises 3 pieces of Single, Heavy Core Rubber Flex in lengths of 3½ft., 5½ft., and 11ft. The 4 ends finish off with heavy spade lugs and 2 ends entering a rugged bakelite plug outlet.

Cat. No. TX1037 .. .. **2/11** Set

## MODULATION CHOKES

Suitable for Heising modulating a 10-watt transmitter, using a 6V6.

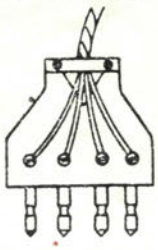
Cat. No. TX1011 .. **10/6** each

## WIRE

4lb. Coils 16 S.W.G. Tinned Copper Wire.

Cat. No. TX1101 .. .. **1/-** each

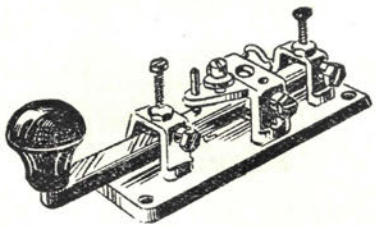
## 4-PRONG PLUG



Heavy 4-Prong Plug.

Cat. No. TX1185 .. .. **1/-** each

## MORSE KEY



As used by Army in ZC1 Transceivers.

Cat. No. TX1075 .. .. **5/11** each

## DIALS

As used in ZC1 Transceivers. Suitable for receivers or transmitters. Can be set for two preset frequencies, with flick tuning mechanism.

Cat. No. TX1090/4 .. .. .. **4/-**

## CONDENSER-RESISTOR LOOMS

Hook-up Wire, with condensers and resistors attached. Each contains 4 25 mfd. 25 volt condensers and 8 asst. resistors.

Cat. No. TX1098 .. .. **4/-** each

As above but mounted on Resistor Board.

Cat. No. TX1099 .. .. **5/-** each

# LAMPHOUSE PUBLICATIONS

## "The Lamphouse" RADIO CIRCUIT BOOK

An 80-page booklet containing nearly 200 different Circuits. Circuits of all types, from Crystal Sets to a 26 Valve De Luxe Receiver. Amplifiers, power packs, electric fence units, testing equipment, short-wave converters, wave traps, oscillators, aerial systems — in short, a Circuit to meet every requirement. Schematic diagrams only are given and not constructional details. No claim is made that this book contains any new Circuits all having previously been published in Lamphouse Annuals or Radiograms.

Enthusiasts, whether beginners or experienced servicemen, will find this book invaluable as a reference medium. Your Radio Library will not be complete without a copy.

Cat. No. TB100—Radio Circuit Book.
Priced at .. .. .. **2/6**

Postage 1d. extra.

## "The Lamphouse" RADIO DATA BOOK

A 96-Page Booklet containing a veritable gold mine of both Radio and Electrical Data, Facts, Figures, Tables and Charts gathered from various Radio and Electrical Text-books and Manuals, and placed between two covers to form the handiest reference guide an experimenter or serviceman could wish for. BE SURE AND GET YOUR COPY.

Cat. No, TB103—Lamphouse Data Book .. .. **3/6**

Postage, etc., 2d.

## "The Lamphouse" RADIO INSTRUCTION BOOK

This 48-page, attractively covered Booklet contains a simple yet most thorough Radio Course, Compiled from previous Lamphouse publications, revised and rewritten in simple, everyday language, for those enthusiasts starting out in Radio as a hobby or a career. Devoid of any deep technical terms as used by Radio veterans. Just a straight-out study in basic radio principles and theory. Questions set and answers given on each chapter.

Cat. No. TB101—Lamphouse Instruction Course .. Price **2/6**

Postage 1d. extra.

# SOCKETS — WIRE

## WAFER SOCKETS

Ruggedly constructed. Certain connection with three points contacting each of the valve pins. Standard mounting centres.

Cat. No. TS631—4-pin ..
Cat. No. TS632—5-pin ..
Cat. No. TS633—6-pin ..
Cat. No. TS634—7-pin ..
Cat. No. TS635—8-pin (Octal) ..

ALL **6D.** EACH

Cat. No. TS636—Loctal .. .. 1/-

Cat. No. TS637 — Sockets for Midget Valves (1S4 series) .. **1/9** each

English 5-pin Special Wafer Sockets (for PM22A Valves). Cat. No. TS640 **3/9**

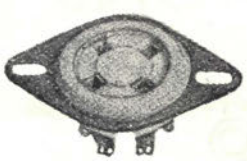
## AMPHENOL VALVE SOCKETS

Amphenol Valve Sockets, complete with metal mounting plates.

Cat. No. TS614—4-pin .. ..
Cat. No. TS615—5-pin .. ..
Cat. No. TS616—6-pin .. ..
Cat. No. TS617—7-pin .. ..
Cat. No. TS619—8-pin .. ..

ALL **10D.** EACH

## "STEATITE SOCKETS"



Made from entirely new dielectric, ultra low loss. Phosphor bronze silver-plated contacts. Steatite Sockets are particularly recommended for high frequency work and where high temperatures are encountered. Ideal for Transmitters and Amplifiers and other apparatus in excess of 20 watts.

Cat. No. TS641—4-pin ..... 3/6
Cat. No. TS642—5-pin ..... 3/6
Cat. No. TS643—6-pin ..... 3/6
Cat. No. TS645—8-pin ..... 3/6

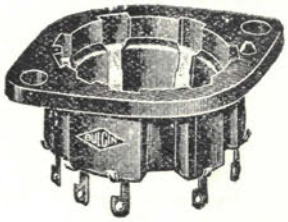
## BASEBOARD MOUNTING VALVE SOCKETS

Amphenol Sockets mounted on raised metal shield to enable the sockets to be screwed on wooden baseboards, etc.

Cat. No. TS620—4-pin ..
Cat. No. TS621—5-pin ..
Cat. No. TS624—8-pin Octal

**2/3** each

## SIDE-CONTACT CHASSIS VALVE-HOLDERS.

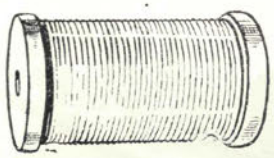


8-CONTACT.

Moulded bakelite chassis valve holders for the side-contact valves. Fitted with eight leaf contacts and integral solder tags. Very efficient and reliable contact is made with valves of the type concerned.

Cat. No. TS638 .. .. .. **1/7**

## INSTRUMENT WIRES



**Only the Best British Wire Stocked.**

PRICES PER REEL.

**Prices given below were correct at the time of going to press.**

**Further shipments covering various sizes are anticipated during the current season and all orders will be executed at the ruling price.**

ENAMELLED WIRE.

| Cat. No. | ½lb. Reels. Gauge. | Price. | Cat. No. | 1lb. Reels. Gauge. | Price. |
|---|---|---|---|---|---|
| TW1 .. | 16 | 2/2 | TW34 | 16 | 6/6 |
| TW2 .. | 18 | 1/4 | TW35 | 18 | — |
| TW2A | 19 | 2/3 | TW35A | 19 | 7/– |
| TW3 .. | 20 | 2/4 | TW36 | 20 | 7/3 |
| TW3A | 21 | 2/5 | TW36A | 21 | 7/6 |
| TW4 .. | 22 | 1/11 | TW37 | 22 | — |
| TW4A | 23 | 2/5 | TW37A | 23 | 7/7 |
| TW5 .. | 24 | 2/– | TW38 | 24 | — |
| TW5A | 25 | 2/6 | TW38A | 25 | 8/– |
| TW6 .. | 26 | 2/7 | TW39 | 26 | 8/4 |
| TW6A | 27 | 2/7 | TW39A | 27 | 8/6 |
| TW7 .. | 28 | 2/2 | TW40 | 28 | — |
| TW8 .. | 30 | 2/10 | TW41 | 30 | 9/9 |
| TW9 .. | 32 | 3/1 | TW42 | 32 | 10/6 |
| TW10 | 34 | 2/4 | TW43 | 34 | 10/9 |
| TW11 | 36 | — | TW44 | 36 | 11/9 |
| TW12 | 38 | 2/9 | TW45 | 38 | 13/– |
| TW13 | 40 | — | TW46 | 40 | — |

D.C.C. WIRE.

| Cat. No. | ½lb Reels. Gauge. | Price. | Cat. No. | 1lb. Reels. Gauge. | Price. |
|---|---|---|---|---|---|
| TW14 | 16 | 2/4 | TW47 | 16 | 6/9 |
| TW15 | 18 | 2/5 | TW48 | 18 | 8/9 |
| TW16 | 20 | 2/8 | TW49 | 20 | — |
| TW17 | 22 | 3/1 | TW50 | 22 | 11/6 |
| TW18 | 24 | 3/6 | TW51 | 24 | — |
| TW19 | 26 | 4/4 | TW52 | 26 | — |
| TW20 | 28 | 4/8 | TW53 | 28 | — |
| TW21 | 30 | — | TW54 | 30 | — |
| TW22 | 32 | — | TW55 | 32 | — |
| TW23 | 34 | — | TW56 | 34 | — |
| TW24 | 36 | — | TW57 | 36 | — |

## ENSIGN PUSH BACK WIRE

Best quality solid push back wire in assorted colours. 10ft. coils.

Cat. No. TW157 ..... **1/-** Coil

Stranded push back wire in assorted colours, 10ft. coils.

Cat. No. TW156 ..... **1/-** Coil

(Any length of push back wire can be supplied at rate of 1/- for 10 feet.)

## METALLIC SHIELDED WIRE

Metal shielded wire. Suitable for grid leads, input leads on Amplifiers, Microphones, Electric String Instruments, etc.

Cat. No. TW158 ..... **5½D.** per ft.

## BATTERY CABLE

5-Wire Battery Cable, insulated with P.V.C. in distinctive colours, bound over all in cotton braid.

Cat. No. TW101 ..... **1/-** per ft.

## MICROPHONE CABLE

Insulated and shielded Microphone Cable for connecting Pickups, Microphones, Speakers, etc.

Cat. No. TW160—Single .. .. **7D.** ft.

Cat. No. TW162—Twin .. .. **1/-** ft.

## THIN FLEXIBLE WIRE

10/.010 P.V.C. Insulated Flex, suitable for battery connections, indoor aerials and for any other purpose requiring a light, thin, stranded insulated flexible wire.

Cat. No. TW159—Single .. **1½D.** ft.

Cat. No. TW168—Twin Twisted **3½D.** ft.

***230 Volt Power Flex. In Electrical Section.***

## Special Purchase

WIRES SUITABLE FOR SPEAKER EXTENSIONS, TALK BACK SYSTEMS, BELL INSTALLATIONS AND SIMILAR PURPOSES.

2-Wire Twin Twisted P.V.C. Flexible Stranded Copper Wire.
Cat. No. TW87A .. **6D.** Yard

2 Wire Rubber-Covered Flexible Wire, covered overall with a waterproof braid.
Cat. No. TW87 .. .. **6D.** Yard

# SWITCHES AND CLIPS

## RADIO TOGGLE SWITCHES

British, quick make-and-break Toggle Switches. Rating 230 v., 3 amp.

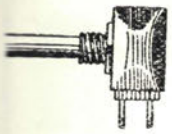
Cat. No. TS441—S.P. On-off Each **2/8**

Cat. No. TS442—D.P. On-off Each **4/3**

Cat. No. TS443—S.P. Change-over Each **3/3**

Cat. No. TS444—D.P. Change-over Each **4/6**

## ROTARY RADIO SWITCHES



Rated 230 volt, 2 amp. These are the type of switches and are supplied with ¼in. shaft, so that a knob can be fitted to match the other controls on the set. One hole fixing. Switch mounted in hermetically sealed cases, perfectly reliable contact, durable construction.

Cat. No. TS445—S.P., on-off .. **5/6** each

## METER PUSH SWITCH

Designed for one-hole fixing to panels between 1/16 in. and 7/32 in. thick. With highly polished nickel-plated bush-nose and coloured insulated plunger. Silver-contacts make sure of trouble-free contact. With terminal screws, one pole live to bush. Rating: 1 amp. at 10 volts or 100 m.a. at 100 volts.

Cat. No. TS482 ..... **4/6** each

## MINIATURE SWITCHES

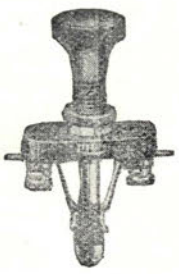
Here's a handy little switch, suitable for radio and motor-car work. Positive action. Nicely finished (nickel plated). British made.

Cat. No. TG118 **2/4**

## PUSH PULL SWITCHES

RELIABLE PUSH PULL BATTERY SWITCHES, for Motor-cars or Radio. Single Hole Fixing.

Cat. No. TS439— **3/-** each



TELSEN (4 point D.P. On/Off) SWITCHES, for panel mounting.

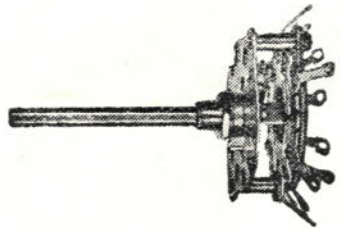
Cat. No. TS438— **3/5** each

## RADIO SWITCH

10 Contact Rotary Switch, for Tapping Coils, etc. Complete with knob.

Cat. No. TS449 .. .. .. **8/6**

## WAVE-CHANGE SWITCHES



Switches suitable for band changing, and for use with test equipment, etc. Best imported manufacture. Made from laminated bakelite. All ¼in. diam. shaft. Phosphor bronze points for sure contact.

10 position, Single Bank Switch; 2¾in. shaft.—Cat. No. TS450 .. **4/-** each

3 position, 2 Bank, 3 pole, 3¼in. Shaft.—Cat. No. TS471 .. **5/11**

3 position, 3 Bank, 3 pole, 3¼in. Shaft.—Cat. No. TS453 .. **6/11**

3 position, 3 Bank, 3 pole, 1¾in. Shaft, length from mounting bush 5¾in. Cat. No. TS476 .. .. **6/11**

2 position, 1 Bank, 6 pole, 2¾in. Shaft.—Cat. No. TS470 .. **6/6**

Single Bank, 3-Pole, 2-Position Switches. Cat. No. TS454 .. .. .. **4/-** each

Single Bank, 2-Pole, 2-Position Switches. Cat. No. TS455 .. .. .. **4/-** each

Single Bank, 2-Pole, 3-Position Switches. Cat. No. TS456 .. .. .. **4/-** each

## WAR SURPLUS

These Switches have been removed from ZC1 Army Tranceivers. All are brand new, although some may have solder marks.

### FLUSH MOUNTING SWITCHES

10 amp., 240 volt Flush Mounting Switches. Can be used for ordinary house lighting circuits or for any other purpose where an on-off switch is required.—Cat. No. TX1019 **1/-** each

### PUSH-TO-TALK SWITCHES

D.P.D.T. Push Switch. Excellent for a meter push switch or for inter-communication work. Depth 3in., width ¾in.

Cat. No. TX1021 .. **2/-** each

### S.P.S.T. TOGGLE SWITCHES

Standard type S.P.S.T. 230-volt 3 amp. Toggle Switch Cat. No. TX1020 .. **2/3** each

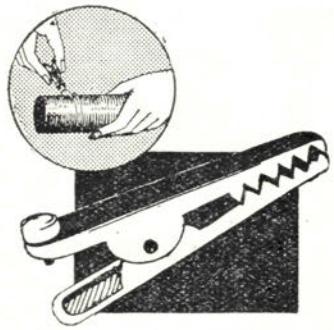
### WAVE CHANGE SWITCHES

3-Bank, 2-Position, 9-Pole Wave Change Switches as used in these Transceivers for Receiver/Band/C.W. Switch. Cat. No. TX1016 .. **4/6** each

2-Bank, 3-Position, 4-Pole Wave Change Switches as used for normal/net/remote switch. Cat. No. TX1017 .. **3/-** each

3-Bank, 3-Position, 6-Pole Wave Change Switches. Cat. No. TX1018 .. **4/6** each

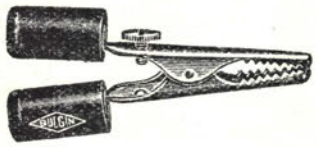
## ALLIGATOR CLIP



Here's a Handy Clip for coil and battery connections. The strong spring ensures a good connection.

Cat. No. TC19 .. .. .. **8**D. each

## INSULATED CROCODILE CLIPS



Insulated Crocodile Clip. Useful for servicemen, experimenters, etc., when dealing with high voltages. Wire passes through insulator to grip sleeve and screw. Nickel-plated. Red and black insulated.

Cat. No. TC18 ..... **1/7** each

## UNIVERSAL BATTERY CLIPS

British made, these Clips have good strong springs that make a sure contact.

Cat. No. TC20— 5 amp. (Pee Wee) 8d. each

Cat. No. TC21—10/25 amps. .. 1/- each

Cat. No. TC22—50 amp. .. .. 1/1 each

Cat. No. TC22A—30 amp. clips (slightly different to illustration) .. 10d. each

## RUBBER COVERED GRID CLIPS

Screen Grid Clips to fit Octal based, glass or metal Valves. Rubber protecting cap moulded over clip. 6in. length of pushback wire attached.—Cat. No. TX1043 .. **3**D. each

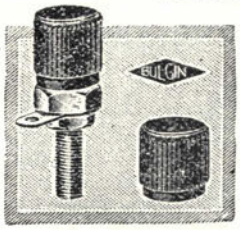
## CLIPS, SCREEN GRID

For attaching leads to the top of screen grid valves, etc.

Cat. No. TC23 .. **1**D. each

Cat. No. TC24— Screen Grid Caps for metal valves .. **1**D.

## SMALL INSULATED TERMINALS, 4BA.



The illustration is approximately full size. These terminals fill the want of many who seek a small, inexpensive type. The heads are removable and have inserts. In two colours, red and black.

Cat. No. TT31 .. .. .. **1/-** each

## N.P. TERMINALS

4 B.A. nickel-plated terminals with hole. Complete with nut. Cat. No. TT8 **7**D. each

## ALL-METAL TERMINALS

Non-insulated all-metal oxidised Radio Terminals. Threaded headpiece & washer screwing down on to base washer makes for sure connection. 4BA x ⅜in. stem allows ample room for attaching insulated washers if terminal is required to be insulated.

Cat. No. TX1051 **6**D. each

Nickel-plated binding posts complete with nut and washer. 4BA stud.

Cat. No, TT6 .. .. .. **6**D. each

## TERMINALS

These Terminals were used for Aerial connections on Transceivers and are an extremely robust and well-insulated job. Overall dimensions of terminal assembly 2¼in. high, ¾in. diameter bakelite top. Heavy rubber insulating washers over steel stem.

Cat. No. TX1050 .. .. **1/6** each

Similar to above but small size (1⅜in. x ¾in.) and not insulated.

Cat. No. TX1050A .. .. **1/4** each

## BANANA PLUGS AND SOCKETS

Banana Plugs and Sockets have all sorts of uses, such as for aerial and earth connections, coil tapping, battery connections, etc. Red and Black. Insulated.

Cat. No. TT23—Banana Plugs only **6**D. each

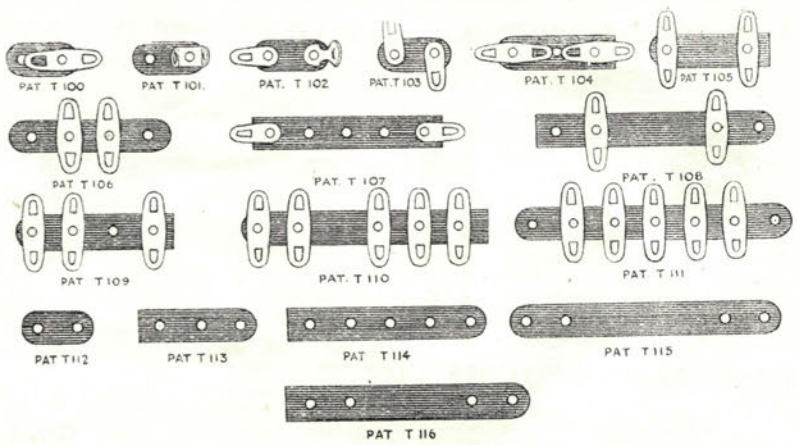
Cat. No. TT24—Sockets for above **6**D. each

## SPADE ANCHOR LUGS

Steel cadmium plated for mounting coils, condensers, shield cans, etc., 6-32 thread. Hole in flat portion fits 9/64in. diameter eyelets and 6/32 screws.

Cat. No. TT40 .. **2**D. each

## TERMINAL STRIPS FOR EVERY PURPOSE!




### A complete range constituting 16 different patterns.

BAKELITE STRIP. ⅜in. wide.

| Cat. No. | | |
|---|---|---|
| TT100—1 lug Straight | .. | 1d. each |
| TT101—1 lug R/angle | .. | 1d. ,, |
| TT102—2 lug 1 R/angle 1 Straight | | 2d. ,, |
| TT103—2 lug R/angles | .. | 2d. ,, |
| TT104—2 lug Straight | .. | 2d. ,, |
| TT105—2 lug R/angles | .. | 2d. ,, |
| TT106—2 lug R/angles | .. | 2d. ,, |
| TT107—2 lug Straight | .. | 2d. ,, |
| TT108—2 lug R/angles | .. | 2d. ,, |
| TT109—3 lug R/angles | .. | 3d. each |
| TT110—5 lug R/angles | .. | 6d. ,, |
| TT111—5 lug R/angles | .. | 6d. ,, |
| TT112—2 Hole Blanks | | |
| TT113—3 ,, ,, | | |
| TT114—5 ,, ,, | | 6d. doz. |
| TT115—4 ,, ,, | | |
| TT116—4 ,, ,, | | |

## SOLDERING LUGS.

4 B.A. Double Ended Soldering Lugs (tinned).

Cat. No. TT7 **3**D. doz.

## PEAR-SHAPED LUGS

Small, ¼in. long, 5/32in. hole.

Cat. No. TT2 **3**D. doz.

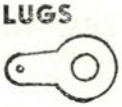
Large, ⅜in. long, 5/32in. hole.

Cat. No. TT3 **3**D. doz

## DROP-SHAPED LUGS

⅜in. long, 7/32in. hole.

Cat. No. TT4 **3**D. doz.



Large N.P. Terminal Spade Lugs.

Cat. No. TT5— **2**D. each

Small N.P. Terminal Spade Lugs.

Cat. No. TT17— **1**D. each, **11**D. doz.

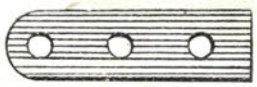
Ring Type Small N.P. Lugs. Cat. No. TT18— **1**D. each, **9**D. doz.

## TERMINAL STRIPS

Terminal Screws mounted on insulated strips.

Cat. No. TT27 .. .. .. **7**D. each

## TERMINAL STRIPS



Bakelite Terminal Strips, 1⅜in. long by ¼in. wide, 1/16in. thick. Three holes provided for mounting terminals, etc. Handy little insulation pieces.

Cat. No. TT503 .. .. .. **6**D. doz.

Cat. No. TT504 (with two holes) **6**D. doz.

## TERMINAL STRIPS

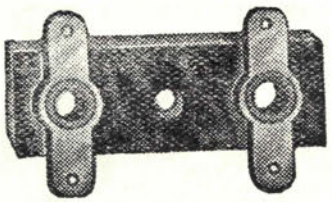
Bakelite Terminal Strips, fitted with double ended lugs. Ideal for the neat assembling of small components, such as resistors and condensers. Lugs eyeletted on to strip.

Cat. No. TT35—24 lug Strip .. **2/6** each

Cat. No. TT36—12 lug Strip .. **1/5** each

Cat. No. TT37— 6 lug Strip .. **9**D. each

## ANCHORING STRIPS



Used for supporting condensers, resistors, etc., above earth or chassis. Fixed by bolt through centre hole.

Cat. No. TT34 ..... **3½**D. each

## FAHNSTOCK CLIPS

Spring Brass. 5/16in. x 1in.

Cat. No. TT41 **2**D. ea.

## "AMPHENOL" MICROPHONE CONNECTORS

A

B

Shielded Connectors for Microphones, Pick-ups, Speakers, etc., etc.

| Cat. No. | | | |
|---|---|---|---|
| TC4 | —Male 1-wire Connector .... | B | 4/– |
| TC6 | —Female 1-wire Connector .. | A | 4/– |
| TC9 | —Female 2-wire Connector .. | A | 5/– |
| TC8 | —Male 2-wire Connector .... | B | 5/6 |
| TC12 | —Female 3-wire Connector .. | A | 7/– |
| TC11 | —Male 3-wire Connector .... | B | 6/– |
| TC16 | —Female 4-wire Connector .. | A | 6/6 |
| TC15 | —Male 4-wire Connector .... | B | 6/6 |

C

TC5—Female 1-wire Chassis mounting Socket C 2/–

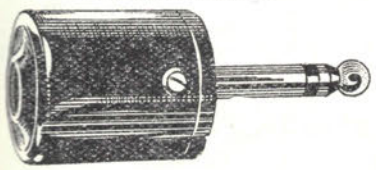
TC7—Female 2-wire Chassis mounting Socket C 4/–

TC10—Female 3-wire Chassis mounting Socket C 3/6

## MICROPHONE CONNECTORS

Cat. No. TC2—Chassis Mounting Socket 2/–
Cat. No. TC3—Cord Connector Plug .. 4/–
Cat. No. TC1—Cord Connector Socket 4/–

## PHONE PLUGS



A Jack Plug with strong brass contacts, Heavy black bakelite moulding.
Cat. No. TP268A .. .. .. **4/6**

## SPEAKER PLUGS

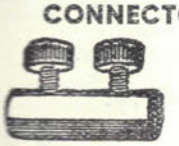
For use with Speakers, Battery Cables, etc. Metal top clips on to a bakelite base. Deep metal casing enables plug to be removed easily from socket and also allows good space for internal wiring.

Cat. No. TP252—4-pin .. .. 1/– each
Cat. No. TP253—5-pin .. .. 1/– each
Cat. No. TP251—8-pin .. .. 1/– each

Black Bakelite Amphenol Type.

Cat. No. TP254—6-pin ..... 1/- ea.
Cat. No. TP255—7-pin ..... 10d. each

## CONNECTORS—SINGLE



Small Brass Connector. Size ¼in. x ⅜in.
Cat. No. TC194—
**3**D. each

## LAMP HOLDERS FOR DIALS

With clip style bracket, made to clip over condenser, etc.
Cat. No. TD504—
**1/-** each

As above, but without clip—TD506 **9**D. each

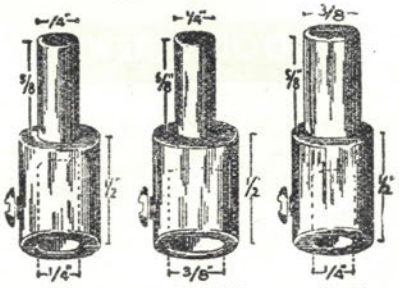
DIAL LAMP HOLDERS, similar to above, but to take miniature bayonet type Dial Lamps. With clip.
Cat. No. TD505 .. .. **1/-** each

## MINIATURE SCREW HOLDERS

Bakelite Lampholders, miniature screw thread which takes torch and similar lamps.

Cat. No. TS223—
**11**D. each

## SHAFT ADAPTORS



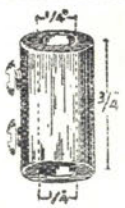

Nº50-50 Nº50-75 Nº750

For Condenser or Volume control shafts, etc.
¼in. to ¼in. shaft extender (50-50)—
Cat. No. TS134 1/6 each

⅜in. to ¼in. shaft reducers (50-75)—
Cat. No. TS133 1/6 each

¼in. to ⅜in. shaft reducers (750)—
Cat. No.TS135 1/6 each

¼in. Diam. Ebonite Rod for insulated condenser shaft: 6in. lengths— Cat. No. TS151 7d. each



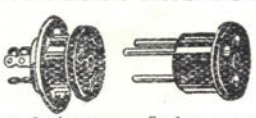

Nº250

## SHAFT CONNECTORS

Solid Brass Shaft Connector, with two set screws each end for joining 2 ¼in. shafts.

Cat. No. TC902 **8**D. each

## CHASSIS PLUGS AND SOCKETS



Miniature 3-pin type. Socket mounts on to chassis. Extremely useful unit for connecting external units such as microphones, pickups, &c.
Cat. No. TP270 .. .. **1/3** pair

## "PANICA" RADIO PANELS

Panica Radio Panelling is practically indestructible. It has high insulating properties, is non-hydroscopic, and has great tensile strength. Panica is easily worked and can be cut, sawn and drilled, has a high polished black mirror finish on both sides, suitable for panels of Radio Sets, test instruments and other apparatus. The sizes given below are approximate, but each panel supplied will cut to size stated.

Cat. No. TP510—5¾in. x 6¾in. x 1/16in. 2/-
Cat. No. TP511—8¾in. x 6¾in. x 1/16in. 3/-
Cat. No. TP512—11¾in. x 6¾in. x 1/16in. 4/-
Cat. No. TP513—5¾in. x 6¾ in. x ¼in. .. 4/-
Cat. No. TP514—8¾in. x 6¾in. x ¼in. .. 6/-
Cat. No. TP515—11¾in. x 6¾in. x ¼in. .. 8/-
Cat. No. TP516—5¾in. x 6¾in. x 3/16in. 6/-
Cat. No. TP517—8¾in. x 6¾in. x 3/16in. 9/-
Cat. No. TP518—11¾in. x 6¾in. x 3/16in. 12/-

## BAKELITE SHEETS

Thin Bakelite Sheets for all insulating purposes

Cat. No. TP530—12in. x 12in. x 1/64in. 1/–
Cat. No. TP531—6in. x 6in. x 1/64in. 6d.
Cat. No. TP534—6in. x 3½in. x 1/64in. 4d.
Cat. No. TP532—12in. x 12in. x 1/32in. 2/10
Cat. No. TP533—6in. x 6in. x 1/32in. 10d.
Cat. No. TP535—6in. x 3½in. x 1/32in. 6d.

## INSULATING MATERIAL

Ebonite Rod and Tube.

Cat. No. TS150—Rod 12in. long x ¼in. diam. ..... 1/–
Cat. No. TS151—Rod 6in. x ¼in. .... 7d.
Cat. No. TS152—Rod 12in. x ⅜in. .. 3/6
Cat. No. TS153—Rod, 6in. x ⅜in. .. 1/10
Cat. No. TS154—Tube 12in. x ⅜in. .. 1/6
Cat. No. TS155—Tube, 6in. x ⅜in. .. 10d.
Cat. No. TS156—Tube 12in. x ⅝in. .. 2/6
Cat. No. TS157—Tube, 6in. x ⅝in. .. 1/4

## SHIELDED BRAID

Metal Screening Tubing, for slipping over insulated wires, etc. for shielding. In many modern A.C. circuits it is essential to screen grid and plate leads to prevent pick-up on these leads. Flexible.

Cat. No. TW163—⅛in.
**7**D. ft.
Cat. No. TW164—3/16in.
**4**D. ft.

## SOLDERING LUG ASSORTMENT

A miscellaneous selection of 100 Assorted Solder Lugs.
Cat. No. TT1 .. .. **1/9** Packet

# RADIO HARDWARE

## SPEAKER CORD TIPS

Nickel-plated tips for speaker and 'phone cords. Cat. No. TT28 .. .. 2D. each

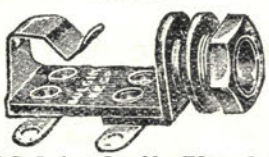
## SOLDERLESS 'PHONE TIPS

A 'Phone Tip that does not need any solder. Especially constructed so that the wire makes a good connection without the use of solder. Cat. No. TT29 1/2 each

## TIP JACKS AND PLUGS

Amphenol Single Tip Jacks; a useful all bakelite plug and chassis mounting socket. Socket can be attached to panel or chassis by means of a gripping ring provided. Plug fits snugly into tight-fitting jaws in socket. Socket can be used separately to take phone or speaker tip.
Cat. No. TJ25 .. .. .. 1/3 pair

## JACKS



Bulgin S.C. Jacks—Cat. No. TJ22 2/9 each

Bulgin Single Closed Circuit Jacks.

Cat. No. TJ23— 3/6 each

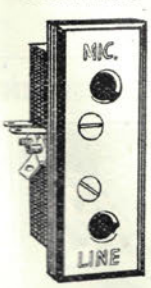
## TWIN TIP JACK UNITS

A strong spring firmly makes contact to any tip inserted within its grip. Mounted on bakelite strip. Metal parts are nickelplated.

Jacks fit any standard 'phone tip.
Cat. No. TJ8 .. .. .. 7D. each

## SURPLUS WAR STOCKS

### Jacks




Single Key Jacks (S.C.), Single-pole double-contact insulated jack mounted on 2½in. x ¾in. bakelite panel.
Cat. No. TX1038— 1/- each

Double Phone Jacks (D.C.) mounted on 2¼ in x ¾in. panel.
Cat. No. TX1039— 1/6 each

Line-Microphone Jacks. A double outlet 3-contact insulated Jack.
Cat. No. TX1040 .. 2/- each

## WOOD SCREWS

Counter-sunk heads. Gimlet points. All sizes can be supplied. The following are in most popular demand:

Bright Mild Steel.

| Cat. No. | Size. | Dozen. |
|---|---|---|
| TT470— | ½in. x 1 | 3d. |
| TT471— | ½in. x 2 | 3d. |
| TT472— | ½in. x 5 | 3d. |
| TT473— | ⅝in. x 3 | 3d. |
| TT474— | ⅝in. x 6 | 4d. |
| TT475— | ¾in. x 4 | 4d. |
| TT476— | ¾in. x 6 | 4d. |
| TT477— | ¾in. x 8 | 5d. |
| TT478— | 1 in. x 4 | 5d. |
| TT479— | 1 in. x 6 | 5d. |
| TT480— | 1 in. x 8 | 6d. |
| TT481— | 1¼in. x 8 | 6d. |
| TT482— | 1½in. x 10 | 7d. |
| TT483— | 1½in. x 6 | 7d. |
| TT484— | 1½in. x 9 | 8d. |

An assortment of 100 wood screws, various sizes. All with countersunk heads. All popular types. Don't be "caught out"! Keep a jar of these screws always on your work bench.
Cat. No. TT466 .. .. .. 2/9 jar

## SCREWS AND NUTS

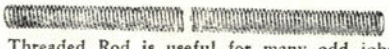
Best English quality. All Brass.

| Cat. No. | Dozen. |
|---|---|
| TT428—½in. x 6BA Screws and Nuts | 9½d. |
| TT430—1in. x 6BA Ditto .. .. | 10½d. |
| TT424—½in. x 4BA Ditto .. .. | 1/1 |
| TT426—1in. x 4BA Ditto .. .. | 1/1 |
| TT421—½in. x 2BA Ditto .. .. | 1/4 |
| TT423—1in. x 2BA Ditto .. .. | 1/6 |
| TT433—6BA Brass Hex. Nuts .. | 5d. |
| TT432—4BA Ditto .. .. | 6d. |
| TT431—2BA Ditto .. .. | 8½d. |
| TT436—6BA Washers .. .. | 6d. |
| TT435—4BA Washers .. .. | 4½d. |
| TT434—2BA Washers .. .. | 4d. |

## SELF-TAPPING SCREWS

For mounting components on radio chassis, etc. ⅜in. long, No. 6 Gauge.
Cat. No. TT420 5D. per dozen
4/9 per gross

## RODS, THREADED—BRASS

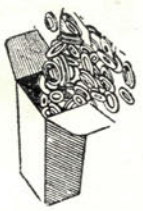


Threaded Rod is useful for many odd jobs, 6in. lengths, each with four nuts.
Cat. No. TS213—5/32 .. .. 8D. each

## TERMINAL PANELS

Terminal Panel 2½in. x 1¼in., fitted with 2 N.P. heavy type screw-down terminals. Ideal for Aerial and Earth, Pick-up Connections or similar purposes. We bought them cheaply—you take advantage of it.
Cat. No. TX271— 9D. each

## FIBRE INSULATING WASHERS



Insulating Washers for insulating potentiometers and other components from metal panels, etc. ⅜in. diam. x ⅛in. diam. hole x 1-16in. thick.
Cat. No. TS232 9D. dozen

Ditto, ⅜in. x ⅜in. x 1/16in.
Cat. No. TS231—
Fibre .. 9D. dozen

## THICK RUBBER WASHERS

Dimensions:
Diameter 11-16 in.; diameter of hole, ¼in.; thickness ¼in.
Cat. No. TS143—
1D. each; 9D. dozen

## PORCELAIN INSULATING WASHERS

High Insulating Properties. Size: Overall Diam., ⅜in. Diam. of hole ⅛in. Thickness, 3-32in.
Cat. No. TS233—
6D. dozen

## RUBBER GROMMETS

Made of good quality black vulcanised rubber. For fitting in holes in chassis, etc., to insulate and protect cables. To fit ¼in. hole. Inside diameter ⅜in.
Cat. No. TS244 .. 2D. each

Fit 3-16in. diam. hole. Inside diam. ⅛in.
Cat. No. TS243 .. .. .. 2D. each

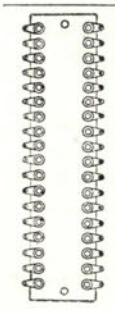
Fits ⅜in. diam. hole. Inside diam. ¼in.
Cat. No. TS245 .. .. .. 3D. each

## SPAGHETTI INSULATING TUBING

| | Each |
|---|---|
| Cat. No. TS1—1 mil., 1 yd. lengths .. | 4½d. |
| Cat. No. TS2—2 mil., 1 yd. lengths .. | 5d. |
| Cat. No. TS3—3 mil., 1 yd. lengths .. | 6d. |
| Cat. No. TS4—4 mil., 1 yd. lengths .. | 8d. |
| Cat. No. TS6—5 mil., 1 yd. lengths .. | 9d. |
| Cat. No. TS5—6 mil., 1 yd. lengths .. | 1/- |

## HOLLOW RIVETS

Cat. No. TS100—⅛in. x 5-32in. long 6d. doz.
Cat. No. TS101—⅛in. x 3-16in. long 6d. doz.
Cat. No. TS102—⅛in. x ¼in. long 6d. doz.



## R.C.S. TERMINAL BOARDS

BAKELITE TERMINAL BOARDS,

for neat assembling of Resistors and Condensers. Lugs are eyeletted on to the bakelite. Mounting holes provided.

23 LUG STRIP.

Neatness is a big factor in any job!

Cat. No. TT38 .. 3/8

# Soldering Material — Keys — Shields

## FOR THE HANDYMAN!

### "SPEEDEE" ELECTRIC SOLDERING IRONS

Consumes 100 watts — no more than a small light bulb. Indispensable to the handy man in workshop or home.
Cat. No. TS406 .. .. **16/7** each

SPARE ELEMENTS FOR ABOVE—
Cat. No. TS407 .. .. .. **6/-** pair

SPARE COPPER BITS—
Cat. No. TS403 .. .. .. **3/-** each

### "SOLON" ELECTRIC SOLDERING IRONS

Improved Bit.—The Bit is of tinned copper of oval section, allowing work to be done in a narrow space. It is designed to provide the maximum amount of heat at the working end with a minimum of heat loss due to radiation, as the heating element is totally enclosed in the bit.

Constant Heat. — Four minutes to heat up and the "Empire" Model SOLON is ready for continuous use if required.

Flexible Lead. — Six feet of Tough Rubber-Sheathed 3-core Flex.

Cat. No. TS410—Solon Domestic or Radio Soldering Iron .. **29/5**

Cat. No. TS394—Spare Elements for "Solon" Soldering Irons .. **8/9** each

### 6-VOLT SOLDERING IRONS

It's been a long time since we were able to offer a low voltage iron like the "PYROBIT INSTRUMENT." Works from a 6-volt storage or Car Battery and consumes only 45 watts. Fine point, and can be manipulated like a pencil. High bit temperature 300 deg. C. Supplied complete with 3½ft. flexible cord.—Cat. No. TS415 **33/-**

### "SPEEDEE" HEAVY DUTY IRONS

Designed for commercial use requiring a heavy iron for long periods. Watts, 180.
Weight, 3½lb.
Cat. No. TS396 .. .. **55/-** each
Spare Elements for above.
Cat. No. TS397 .. .. **19/-** each

### SOLDER 34/66

FULL SIZE STICKS.
Cat. No. TS418 .. .. **1/6** each

Resin Core Solder is recommended for the home constructor. It looks like wire and is filled with a resin preparation which eliminates the necessity for using flux or spirits of salts, etc.

Instructions for Using:

1. The joints to be soldered should be thoroughly cleaned and free from acid or grease. On plated parts (nickel or chromium) the "plate" should be filed away where the joint is to be made.
2. Heat the soldering iron just enough to melt the solder. "Tin" the copper bit by first filing lightly and then rubbing with the cored solder until coated.
3. Heat again for working, but not to red heat.
4. Apply the bit and the cored solder to the work, rubbing the bit well down to transmit the heat. It is important that the bit, cored solder and joint should come into contact simultaneously.

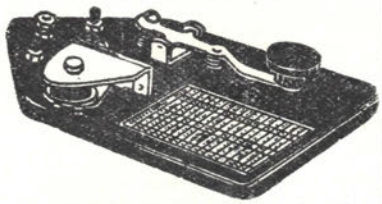
Cat. No. TS411—
Small Reel, about 27 inches .. **7D.** each

Cat. No. TS413—1lb reel .. .. **8/10**

### SOLDERING PASTE

Morton's Super Soldering Paste. An ideal paste for use instead of flux or resin. Can be used on all metals except aluminium.
Cat. No. TS423—2oz. tins .. .. **1/5**
Cat. No. TS424—4oz. tins .. .. **2/1**

### BIG BARGAIN!
### MORSE PRACTICE SETS



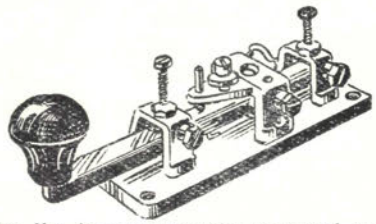
British-made Morse Practice Set, has Morse Code embossed on base. Stroke of key can be adjusted to individual requirements. Terminals are provided so that the Set can be used in conjunction with another set. Containing Key and Buzzer on One Base. Light Pattern. Measurements 4½in. long, 2⅝in. wide, 1⅝in. high. Cat. No. TH110

Reduced from **8/9** TO **5/11** each

### ALUMINIUM SOLDER

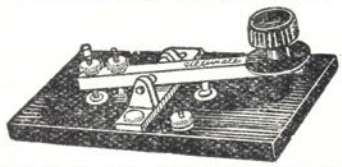
For repairs in aluminium ware and die cast metals. No soldering iron or flux necessary. Recommended for aluminium saucepans, kettles. Full instructions supplied with each stick.
Cat. No. TS420—Small stick, 5in. x ¼in. **1/8**

### "SERVICES" MORSE KEYS

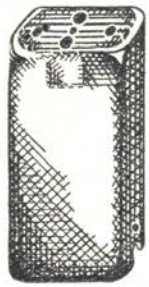


This Key is very compactly constructed on a bakelite base measuring 3½in. x 1⅝in. Very efficient for sending Morse at a high speed, and is complete with fine adjusting screw. As used by the Army and other services.
Cat. No. TX1075A .. .. **5/11**

### "ULTIMATE" MORSE KEY



Heavy brass arm and bridge. Fine adjustment of spacing and tension provided. Wooden knob, and finger rest flange, ensuring comfortable operation grip. Mounted on wooden base, finished in varnish. Measures 6in. long, 3in. wide, 3in. high (overall).
Cat. No. TH111 .. .. .. **8/10**



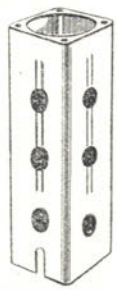
### I.F. CAN

Single piece I.F. Can, 1⅝in. x 1⅝in. x 3in. high. All necessary holes provided.
Cat. No. TS25— **1/11** each

### "GOAT" VALVE SHIELDS

Form fitting Valve Shields, complete with split ring and base mounting clips.
Cat. No. TS20— **1/3** complete

Metal Shields for G.T. Type Valves.
Cat. No. TS21 .. **9D.** each

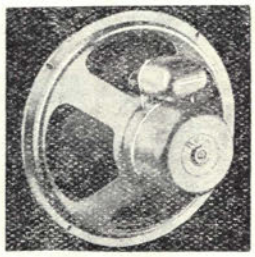


### VALVE SHIELDS

Cadmium plated Valve Shields for glass Octal based Tubes, 4½in. x 1½in. x 1½in. Complete with flush mounting base.
Cat. No. TX1052— **1/-** complete

Similar Shield to above but made from heavy metal and reinforced.
Cat. No. TX1054— **1/3** complete

# SPEAKERS



## "ROLA" SPEAKERS

### ABRIDGED SPECIFICATIONS AND PRICE LIST OF "ROLA" SPEAKERS.

| Cat. No. and Type. | Overall diameter. | Voicecoil diameter. | Voicecoil impedance | Normal field excitation | Maximum weight of field coil. | Prices. |
|---|---|---|---|---|---|---|
| **Electro-Dynamic.** | | | | | | |
| TS922—K-8 .. | 8 in. | 1 in. | 2.3 ohms | 8 watts | 1½ lbs. | 2 16 6 |
| TS923—F-5B .. | 6¾in. | ¾in. | 3.7 ohms | 6 watts | ¾ lbs. | 2 6 2 |
| TS924—F-4 ... | 5 in. | ¾in. | 3.7 ohms | 6 watts | ¾ lbs. | 2 5 7 |

### Permanent Magnet—Complete with Transformer

| | Rola type | Voice. | Diam. | Flux | Each £ s. d. |
|---|---|---|---|---|---|
| Cat. No. TS925 .. .. | G12 | 1¾in. | 12in. | 13,500 | 15 0 0 |
| „ „ TS954 .. .. | 12/42 | 1 in. | 12in. | 13,000 | 4 7 1 |
| „ „ TS955 .. .. | 10/42 | 1 in. | 10in. | 13,000 | 4 7 1 |
| „ „ TS956 .. .. | 8/42 | 1 in. | 8in. | 13,000 | 4 3 0 |
| „ „ TS957 .. .. | 8/7 | 1 in. | 8in. | 10,000 | 2 14 0 |
| „ „ TS958 .. .. | 8K | 1 in. | 8in. | 8,500 | 2 4 10 |
| „ „ TS959 .. .. | 6H | ¾in. | 6in. | 9,500 | 1 17 1 |
| „ „ TS960 .. .. | 5C | ⅝in. | 5in. | 7,000 | 1 9 9 |
| „ „ TS961 .. .. | 3C | ⅝in. | 3in. | 7,000 | 1 9 9 |

## "ENSIGN" SPEAKER EXTENSION ADAPTORS

Extension Speaker Adaptors. The problem of fitting an extension speaker to your electric set has been solved. All you do is remove the output valve, plug in the adaptor, then put back the valve on top of the adaptor. The adaptor can also be used as a tone improver.

Can be used in conjunction with all P.M. speakers which have output transformers fitted.

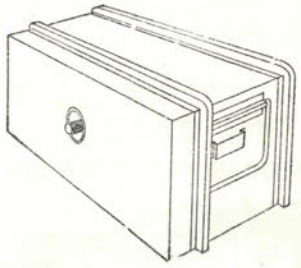
Cat. No. TS780—4-pin ..... **7/6** each
Cat. No. TS781—5-pin ..... **7/6** each
Cat. No. TS782—6-pin ..... **7/6** each
Cat. No. TS783—Octal ..... **8/6** each

## SPEAKER SILK

Special Fabric for putting in front of Speakers in cabinets, etc.

Cat. No. TS900—12in. x 12in. **1/5** each
Cat. No. TS901—16in x 16in. **2/6** each

## METAL TOOL BOXES



This box is actually the Cabinet in which the ZC1 set is made. Waterproof, moistureproof, etc. Inside measurements are 20½in. x 11in. x 8½in. Made of steel, crackle finished in green and featuring a rubber flange on which the lid is fitted by pressure thumb screws. Canvas cover fits over lid. Carrying handles at either end.—Cat. No. TX1078 .. **19/6** each

## WING SCREWS

Wing Screws, with ½in. long thread, ¼in. diameter.

Cat. No. TX1127— **1D.** each

## *WAR SURPLUS*

**Featured throughout this Annual are numerous WAR SURPLUS LINES. Look for them—they're all RED HOT BARGAINS!**

# CHOKES

## H.F. CHOKES

Honeycomb wound H.F. Chokes. 10M.H.
Cat. No. TC140 **2/-** each

H.F. CHOKES.

2.5 M.H. Pye Wound (4-pye) Chokes, wound on Isolantite Former. We have overbought this line and are therefore prepared to sell them at a greatly reduced price. Usually 4/6 each.
Cat. No. TC47 .. **1/9**

Similar to above but with connecting leads cut rather short. Removed from New ZC1 Receivers .. .. .. .. **1/3**
Cat. No. TX1047A

## L.F. CHOKES

30 hy. 50 M.A. Filter Chokes.
Cat. No. TC141 .. .. .. **14/6**

30 hy. 100 M.A. ditto.
Cat. No. TC142 .. .. .. **19/6**

30 hy. 150 M.A. ditto.
Cat. No. TC143 .. .. .. **29/6**

# WAR BARGAINS!

## CHOKES REMOVED FROM ZC1 TRANSCEIVERS

### 30 Henry 100 MA Filter Chokes

Mounted in metal containers 2in. high x 3in. between mounting holes. Lug type connections.
Cat. No. TX1010 .. **17/6**

### Modulation Chokes

Small Heavy Duty Modulation Chokes. Similar dimensions and description to above. Suitable for plate circuits of 6V6GT or similar valve.
Cat. No. TX1011 .. **10/6** each

### Parasitic Chokes

The ideal Unit for preventing parasites in low and medium power Transmitters. 3½in. x ¼in.
Cat. No. TX1047 .. **1/-** each

## *LAMPHOUSE ANNUAL*

**This Catalogue contains particulars of goods which we expect to have in stock during the 1948-49 Radio season. There are times when certain lines will be out of stock. When ordering, please advise whether you wish us to substitute with the nearest goods available, or not.**

# SENSATIONAL VALUE! ANOTHER SMASHING BARGAIN!

# 5in. AMERICAN P.M. SPEAKERS

Dependability,
Performance,
Appearance!

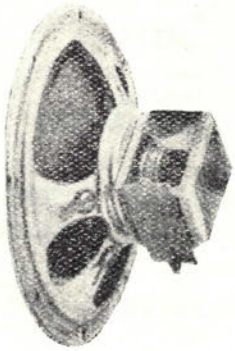
Cadmium Plated Overall.

LOOK—

**24/11**

EACH (Complete)

Cat. No. TS950. — Post Free



Complete with Ready Mounted

**MIDGET OUTPUT TRANSFORMER**

Either 2,500 or 5,000 ohms.

FEATURING:

**The Famous "ALNICO 5" MAGNET**

The MAGNET that combines LARGE CAPACITY with Exceptionally LIGHT WEIGHT.

We bought a big quantity at a good price, so now you take advantage of it!

IT'S ANOTHER LAMPHOUSE BARGAIN !

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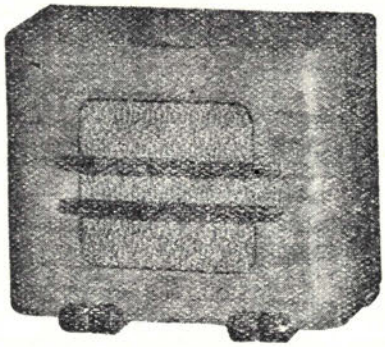
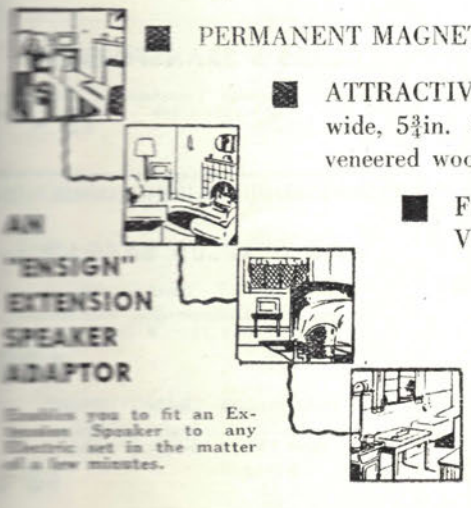
**MAKE EVERY ROOM A RECEPTION ROOM**

with an

# ENSIGN EXTENSION SPEAKER





- PERMANENT MAGNET SPEAKER WITH 5½in. CONE.
- ATTRACTIVE CABINET, 8½in. high, 11in. wide, 5¾in. deep. In Dark Brown, richly veneered wood.
- FITTED WITH 10,000 OHM VOLUME CONTROL.
- Type of Speaker permits connection to all types of Receivers, whether mains or battery, having high impedance output.

Cat. No. TS935A **£3/19/6**

AN "ENSIGN" EXTENSION SPEAKER ADAPTOR

Enables you to fit an Extension Speaker to any Electric set in the matter of a few minutes.

---

## SPEAKER FLEX.

This Twin Transmission Cable, for extension Speakers, Speaker Systems or for double Aerial and similar Aerial Systems. Standard Flexible 24-Core Wire, rubber-covered and covered over all in a Waterproof Braid. Flexible and long-lasting.

Cat. No. TW87 .. .. **6**D. per yard.

## EXTENSION SPEAKER CABINETS

Richly veneered, well made Speaker Cabinets. Dimensions: 12in. wide, 10in. high, 6½in. deep. Finished in Honey-coloured Trimmings.

Cat. No. TC151 .. .. **39/6** each.

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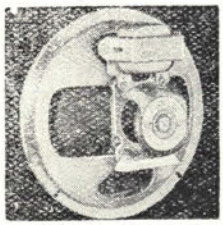
# PHILIPS "TICONAL" P.M. SPEAKERS



**3 1/16in. SPEAKER:**

This is an excellent Midget Speaker, built to a high engineering standard, and with a surprisingly high output. Voice Coil impedance, 10 ohms at 1000 cycles per second. Baffle aperture 2 11-16in. Without Output Transformer.

Cat. No. TS936 .. .. **21/3** each

**6¾in. SPEAKER:** A medium sensitivity light weight Speaker with good rigidity. Voice Coil impedance, 5 ohms at 1000 cycles per second. Baffle aperture 6in. Without Output Transformer.

Cat. No. TS945 .. .. **23/3** each

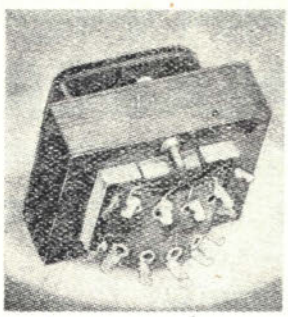
**8½in. SPEAKER:** A high quality 8½in. standard Speaker of recognised quality. Already used in many commercial made receivers. Voice Coil impedance, 5 ohms at 1000 cycles per second. Baffle aperture 7¾in. Without Output Transformer.—Cat. No. TS946 .. **31/6** each

**Suitable Transformer.**

A suitable Transformer for use with any of the above "Philips" Speakers would be the "Minor" 3-watt Universal Output Transformer.

Cat. No. TT603 .. .. **14/-**

## POWER TRANSFORMERS



WELL MADE, FIRST GRADE TRANSFORMERS. 230 VOLT PRIMARY WINDINGS. FLAT MOUNTING.

*Secondary Windings:*

350/350 volts, 60 M.A.; 5 volt, 2 amp; 6.3 volt, 2 amp.—Cat. No. TT650 .. **34/9**

385/385 volts, 80 M.A.; 5 volt, 2 amp; 6.3 volt, 3 amp.—Cat. No. TT651 .. **38/-**

385/385 volts, 100 M.A.; 5 volt, 2 amp; 6.3 volt, 4 amp.—Cat. No. TT652 .. **41/6**

400/400 volts, 150 M.A.; 5 volt, 3 amp; 6.3 volt, 4 amp.—Cat. No. TT654 .. **62/6**

350/350 volt, 60 M.A.; 5 volt, 2 amp; 2.5 volt, 5 amp.—Cat. No. TT656 .. **34/9**

385/385 volt, 80 M.A.; 5 volt, 2 amp; 2.5 volt, 8 amp.—Cat. No. TT657 .. **38/-**

385/385 volt, 100 M.A.; 5 volt, 2 amp; 2.5 volt, 10 amp.—Cat. No. TT658 .. **41/6**

UPRIGHT MOUNTING.

Similar Transformers to the above but constructed for vertical mounting.

60 M.A., 6.3 volts. Cat. No. TT650A .. .. **34/9**

80 M.A., 6.3 volts. Cat. No. TT651A .. .. **38/-**

100 M.A., 6.3 volts. Cat. No. TT652A .. .. **41/6**

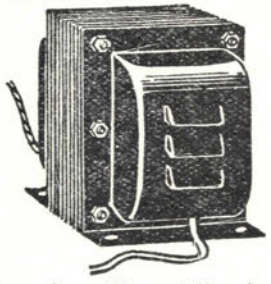
125 M.A., 6.3 volts. Cat. No. TT653A .. .. **52/6**

## Special 150 M.A. Transformers

6.3 volt, 150 M.A. Upright Mounting Power Transformers. Suitable for use with receivers and amplifiers requiring 2 separate 6.3 v. windings. 5 volt, 3 amp Rectifier winding. Mounted in crackle finished case. Wire lead connections.

Cat. No. TT655 .. .. **£3/9/6**

## 230/110v. TRANSFORMERS



Stepdown from 230 to 110 volts. Rating 60-80 watts.

Cat. No. TT622 .. .. .. **35/6**

Larger or special stepdown transformers can be made to order.

## ELECTRIC HIKERS' POWER TRANSFORMER

Power Transformers wound especially for use with the "Electric Hikers" and "Eaglet Two" Kitsets.

Cat. No. TT670 .. .. **40/-** each

## "ENSIGN" ELECTRIC SHAVER TRANSFORMERS

Stepdown from 230 to 110 volts at 15 watts. Specially constructed for use with 110 volt Electric Shavers. Dimensions: Length 2¼in., Height, 2in., weight 1lb 3oz.

Cat. No. TT621 .. .. **24/6** each

## 240/6 VOLT TRANSFORMERS

This reducer supplies 6 volts 5 amps. from the 240-volt light or power. A 2-pin plug outlet is provided.

Cat. No. TT623 .. .. **37/6** each

## FILAMENT TRANSFORMERS

Cat. No. TT632—6.3 volts 2 amp. .. **25/-**

## TRANSFORMERS FOR VALVE TESTERS

In response to many enquiries we have now available a special transformer for valve testers, experimenters, etc. It has a 230-volt primary and secondary tappings of 2 amps., as follows—1.5 volts, 2 volts, 2.5 volts, 4 volts, 5 volts, 6.3 volts, 7.5 volts, 12.5 volts, 25 volts and 30 volts.

Cat. No. TT616 .. .. .. **47/6**

## "ENSIGN" VIBRATOR POWER TRANSFORMERS

Manufactured from the first grade material. 150 volt, 25 M.A.—6 volt.

Cat. No. TT625 .. .. .. **17/6**

## "ENSIGN" UNIVERSAL OUTPUT TRANSFORMERS

These Transformers have been designed to meet the needs of engineers, experimenters, and servicemen, for a single unit so constructed as to provide the correct impedance matching between various types of Audio Output Tubes in a single Push-Pull, Parallel, or Class B Circuit, and any Dynamic Speaker. Full instructions are given with each Transformer. Rating 6 watts.—Cat. No. TT602 .. **17/6** each

## "MINOR" UNIVERSAL OUTPUT TRANSFORMERS

Similar Transformer to above but rated at 3 watts. Replacement Transformer for 3in. and 5in. Speakers, as used in small receivers, etc. Dimensions: Length, 1⅞in.; height, 1⅝in. Small size makes this ideal where cabinet space is limited. Instructions with each transformer.—Cat. No. TT603 **14/-**

## 20 WATT UNIVERSAL OUTPUT TRANSFORMERS

Designed specially for Power Amplifier Systems, etc.; 12in. Speakers. PRIMARY tapped at 5000, 6600, 8000 10,000 ohms; SECONDARY to suit 1.5, 3, 8, 15, or 500 ohms. Good quality Transformer at low cost.

Cat. No. TT604 .. .. .. **57/6**

## "ENSIGN" SPEAKER TRANSFORMERS

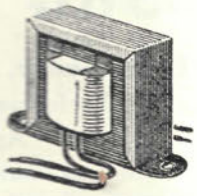
Made from the best stalloy steel and wire and under strict supervision these transformers are ideal for replacement. etc.

Cat. No. TT714—Single Pentode ..

Cat. No. TT715—Push Pull Pentode

Cat. No. TT716—Single Triode ..

Cat. No. TT717—Push Pull Triode



**12/6** Each

## "ENSIGN" SPEAKER TRANSFORMER COILS

Will fit practically all types of Speaker Transformers, thus doing away with the necessity of replacing the complete transformer.

Cat. No. TT730—Single Pentode **6/10**

Cat. No. TT731—Single Triode .. **7/6**

Cat. No. TT732—P.P. Pentode .. **7/6**

Cat. No. TT733—P.P. Triode .. **7/6**

## "ENSIGN" AUDIO TRANSFORMER

Vacuum Sealed Interstage Audio Transformer. Wound on first grade core using best quality copper wire flexible leads to ensure higher efficiency. Ratio 3 to 1. Size, 2¼ins. high, 3ins. wide and 2ins. deep.

Cat. No. TT606—

**16/-** each

## CLASS B TRANSFORMERS

Class B Interstage Transformers, for Battery Sets, etc. Heavy robust job.

Cat. No. TT605 .. .. **12/-** each

## WAR SURPLUS BARGAINS

MICROPHONE TRANSFORMERS.

For use with Dynamic type Microphones. Sizes 1½in. x 1½in. x 2in. high.

Cat. No. TX1013 .. .. .. **10/6**

HEADPHONE TRANSFORMERS.

For matching Dynamic Headphones. Sizes 1½in. x 1½in. x 2in. high.

Cat. No. TX1012 .. .. .. **10/6**

ZC1 VIBRATOR TRANSFORMERS.

Power Transformers from ZC1 Tranceivers. Input 12 volts. Two Output windings, 180/0/180 volts and 300/0/300 volts. "Hams" have many uses for these useful transformers.

Cat. No. TX1088 .. .. **17/6** each

IF IT'S VALVES you require—why, the LAMPHOUSE of course. All makes available—Radiotron, Raytheon, Tungsol, Kenrad, Philips, Brimar, etc. Owing to the import restrictions we cannot guarantee supplies of all types in all brands, and suggest you state first and second preference of brand on your orders.

**Prices subject to alterations.**

| Type. | Price. |
|---|---|
| 01A | 9/6 |
| 0A3/VR75 | 16/3 |
| 0A4G | 19/5 |
| 0C3/VR105 | 19/10 |
| 0D3/VR150 | 19/7 |
| 0Z4 | 13/3 |
| 0Z4G | 12/8 |
| 1A4P | 13/10 |
| 1A5G | 14/2 |
| 1A5GT | 14/2 |
| 1A6 | 13/2 |
| 1A7G | 14/3 |
| 1A7GT | 13/1 |
| 1B4P | 14/6 |
| 1B5/25S | 12/7 |
| 1C4 (Aus) | 13/6 |
| 1C5G | 13/11 |
| 1C5GT | 15/– |
| 1C6 (Aus) | 18/– |
| 1C7G (Aus) | 15/6 |
| 1D4 (Aus) | 13/6 |
| 1D5GP | 14/– |
| 1D7G | 13/1 |
| 1D8GT | 20/5 |
| 1E5GP | 12/6 |
| 1E7GV | 18/6 |
| 1F4 | 13/7 |
| 1F5G | 14/6 |
| 1F6 | 14/7 |
| 1F7GV | 14/4 |
| 1G4GT | 13/2 |
| 1G5G | 11/6 |
| 1G6GT | 13/3 |
| 1H4G | 8/5 |
| 1H5G | 13/5 |
| 1H5GT | 11/9 |
| 1H6G | 13/1 |
| 1J6G | 12/5 |
| 1K4 (Aus) | 11/6 |
| 1K5G (Aus) | 13/6 |
| 1K6 (Aus) | 15/6 |
| 1K7G (Aus) | 15/– |
| 1L4 | 9/6 |
| 1L5G (Aus) | 13/– |
| 1LA4 | — |
| 1LA6 | 22/3 |
| 1LD5 | 19/6 |
| 1LH4 | 27/– |
| 1LN5 | 19/3 |
| 1M5G (Aus) | 12/1 |
| 1N5G | 12/6 |
| 1N5GT | 14/– |
| 1P5GT | 14/10 |
| 1Q5GT | 13/– |
| 1R5 | 13/11 |
| 1S4 | 13/11 |
| 1S5 | 13/11 |
| 1T4 | 13/11 |
| 1T5GT | 16/– |
| 1U4 | — |
| 1U5 | 15/6 |
| 1V | 8/5 |
| 2A3 | 16/1 |
| 2A5 | 9/11 |
| 2A6 | 10/2 |
| 2A7 | 11/1 |
| 2B7 | 12/2 |
| 2E5 | 12/– |
| 3Q4 | 13/3 |
| 3Q5GT | 14/10 |
| 3S4 | 15/– |
| 3V4 | 18/– |
| 5R4G | 21/6 |
| 5T4 | 16/2 |
| 5U4G | 9/7 |
| 5V4G | 15/1 |
| 5W4 | 10/3 |
| 5W4GT | 10/– |
| 5X4G | 9/1 |
| 5Y3GT | 7/4 |
| 5Y4G | 7/3 |
| 5Z3 | 8/11 |
| 5Z4 | 13/6 |
| 6A3 | 16/6 |
| 6A4 | 11/6 |
| 6A6 | 12/11 |
| 6A7 | 11/3 |
| 6A8 | 13/6 |
| 6A8G | 11/– |
| 6A8GT | 11/1 |
| 6AB5/6N5 | 13/6 |
| 6AB7/1853 | 19/2 |
| 6AC5G | 10/– |
| 6AC7/1852 | 20/– |
| 6AF6G | 11/4 |
| 6AG5 | 18/5 |
| 6AG7 | 18/– |
| 6AK5 | 37/6 |
| 6AK6 | 17/– |
| 6AL5 | 18/6 |
| 6AQ5 | 13/9 |
| 6AQ6 | 15/5 |
| 6AT6 | 10/11 |
| 6AU6 | 12/6 |
| 6B4G | 19/6 |
| 6B5 | 17/6 |
| 6B6G | 11/6 |
| 6B7 | 12/8 |
| 6B8 | 14/10 |
| 6B8G | 12/10 |
| 6BA6 | 13/7 |
| 6BE6 | 12/9 |
| 6C4 | 12/9 |
| 6C5 | 10/8 |
| 6C5G | 10/– |
| 6C5GT | 10/– |
| 6C6 | 10/4 |
| 6C8G | 14/3 |
| 6D6 | 10/1 |
| 6D8G | 12/7 |
| 6E5 | 12/10 |
| 6F5 | 11/7 |
| 6F5G | 9/4 |
| 6F5GT | 9/6 |
| 6F6 | 11/8 |
| 6F6G | 10/2 |
| 6F6GT | 9/– |
| 6F7 | 14/5 |
| 6F8G | 12/11 |
| 6G6G | 13/11 |
| 6G8G (Aus) | 14/3 |
| 6H6 | 10/– |
| 6H6G | 8/6 |
| 6H6GT | 9/6 |
| 6J5 | 9/10 |
| 6J5G | 8/3 |
| 6J5GT | 9/2 |
| 6J6 | 18/5 |
| 6J7 | 11/9 |
| 6J7G | 10/6 |
| 6J7GT | 10/10 |
| 6J8G | 12/– |
| 6K5GT | 10/3 |
| 6K6G | 9/4 |
| 6K6GT | 10/6 |
| 6K7 | 11/7 |
| 6K7G | 10/2 |
| 6K7GT | 9/11 |
| 6K8 | 13/6 |
| 6K8G | 14/4 |
| 6K8GT | 13/6 |
| 6L5G | 9/6 |
| 6L6 | 19/– |
| 6L6G | 16/4 |
| 6L7 | 13/7 |
| 6L7G | 13/– |
| 6N6G | 18/– |
| 6N7 | 13/6 |
| 6N7G | 11/6 |
| 6N7GT | 13/1 |
| 6Q7 | 12/4 |
| 6Q7G | 10/– |
| 6Q7GT | 10/7 |
| 6R7 | 12/9 |
| 6R7G | 10/4 |
| 6R7GT | 10/– |
| 6S7 | 12/– |
| 6S7G | 11/10 |
| 6SA7 | 10/7 |
| 6SA7GT | 11/6 |
| 6SB7 | 15/11 |
| 6SC7 | 12/6 |
| 6SF5 | 10/6 |
| 6SF7 | 12/– |
| 6SG7 | 11/9 |
| 6SJ7 | 10/10 |
| 6SJ7GT | 12/9 |
| 6SK7 | 10/7 |
| 6SK7GT | 11/1 |
| 6SL7GT | 14/3 |
| 6SN7GT | 13/7 |
| 6SQ7 | 11/8 |
| 6SQ7GT | 11/6 |
| 6SS7 | 9/6 |
| 6T7G | 12/1 |
| 6U5/6G5 | 12/7 |
| 6U7G | 9/10 |
| 6V6 | 14/9 |
| 6V6G | 10/6 |
| 6V6GT | 10/– |
| 6V6GT/G | 10/1 |
| 6W7G | 12/6 |
| 6X4 | 11/6 |
| 6X5 | 12/5 |
| 6X5G | 10/6 |
| 6X5GT | 10/6 |
| 6X5GT/G | 10/10 |
| 6Y6G | 13/6 |
| 6Z7G | 13/6 |
| 6ZY5G | 14/4 |
| 7A4 | 15/6 |
| 7A5 | 13/– |
| 7A6 | 14/– |
| 7A7 | 14/– |
| 7A8 | 14/– |
| 7B4 | 13/– |
| 7B5LT | 14/– |
| 7B6 | 15/6 |
| 7B7 | 14/– |
| 7B8 | 14/– |
| 7C5 | 13/– |
| 7C6 | 14/– |
| 7C7 | 15/6 |
| 7F8 | — |
| 7G7 | — |
| 7H7 | 23/– |
| 7J7 | 23/– |
| 7Q7 | — |
| 7Y4 | 15/6 |
| 10 | 25/11 |
| 12A6 | 20/– |
| 12A6GT | 10/9 |
| 12A7 | 16/9 |
| 12A8GT | 10/10 |
| 12B8GT | 13/9 |
| 12C8 | 14/1 |
| 12F5GT | 10/3 |
| 12J5GT | 9/9 |
| 12J7GT | 11/6 |
| 12K7GT | 10/7 |
| 12K8 | 17/– |
| 12Q7GT | 11/6 |
| 12SA7 | 11/3 |
| 12SA7GT | 12/6 |
| 12SC7 | 11/8 |
| 12SF5 | 9/6 |
| 12SG7 | — |
| 12SH7 | — |
| 12SJ7 | 10/7 |
| 12SK7 | 10/6 |
| 12SN7GT | 15/6 |
| 12SQ7 | 10/6 |
| 12SR7 | 13/6 |
| 12SS7 | — |
| 12Z3 | 11/10 |
| 15 | 16/4 |
| 19 | 12/6 |
| 24A | 10/11 |
| 25A6 | 13/10 |
| 25A6GT | 10/9 |
| 25A7G | 13/6 |
| 25A7GT | 12/6 |
| 25B6G | 12/6 |
| 25L6 | 12/6 |
| 25L6G | 10/– |
| 25L6GT | 11/11 |
| 25Y5 | 19/6 |
| 25Z5 | 9/8 |
| 25Z6 | 11/11 |
| 25Z6G | 9/6 |
| 25Z6GT | 10/7 |
| 26 | 7/– |
| 27 | 7/1 |
| 30 | 7/11 |
| 31 | 8/6 |
| 32 | 12/10 |
| 33 | 11/6 |
| 34 | 15/– |
| 35 | 10/2 |
| 35A5 | 15/6 |
| 35L6GT | 10/9 |
| 35Z3 | 14/10 |
| 35Z4GT | 10/5 |
| 35Z5GT | 10/7 |
| 36 | 10/1 |
| 37 | 11/9 |
| 38 | 10/2 |
| 39/44 | 10/4 |
| 41 | 9/9 |
| 42 | 9/8 |
| 43 | 10/5 |
| 45 | 7/9 |
| 45Z5GT | 10/6 |
| 46 | 11/9 |
| 47 | 10/10 |
| 48 | 21/– |
| 49 | 11/2 |
| 50 | 20/9 |
| 50L6GT | 12/3 |
| 50Y6GT | 9/6 |
| 53 | 14/9 |
| 55 | 9/6 |
| 56 | 7/6 |
| 57 | 9/8 |
| 58 | 9/8 |
| 59 | 14/11 |
| 70L7GT | 18/3 |
| 71A | 9/8 |
| 75 | 9/10 |
| 76 | 7/3 |
| 77 | 9/11 |
| 78 | 10/3 |
| 79 | 11/2 |
| 80 | 8/4 |
| 81 | 18/8 |
| 82 | 12/– |
| 83 | 11/– |
| 83V | 14/6 |
| 84/6Z4 | 11/– |
| 85 | 9/6 |
| 89 | 9/11 |
| 112A | 9/6 |
| 117Z3 | 16/– |
| 117Z6GT | 16/6 |
| 117L7GT | 20/6 |
| 117N7GT | 19/4 |
| 117P7GT | — |

## Transmitting and Special Types

(PRICES ON APPLICATION)

# MULLARD VALVES

| Type. | Base. | Price. |
|---|---|---|
| AC044 | A | 16/6 |
| AZ1 | A | 9/– |
| AZ31 | K | 9/– |
| CBL1 | P | 16/7 |
| CCH35 | K | 18/– |
| CL33 | K | 15/3 |
| CL4 | P | 17/6 |
| CY1 | P | 12/1 |
| CY31 | K | 12/1 |
| CIC | A | 17/6 |
| DAC32 | K | 13/– |
| DF33 | K | 15/– |
| DK32 | K | 15/9 |
| DL33 | K | 15/– |
| DL35 | K | 13/6 |
| DAF91 (as 1S5) | B7G | 13/6 |
| DF91 (as 1T4) | B7G | 13/6 |
| DK91 (as 1R5) | B7G | 13/6 |
| DL92 (as 3S4) | B7G | 15/– |
| DW2 | A | 11/7 |
| DW4/350 | A | 11/6 |
| EB34 | K | 11/4 |
| EB4 | P | 10/3 |
| EBC3 | P | 13/6 |
| EBC33 | K | 12/2 |
| EBF2 | P | 15/9 |
| EBL1 | P | 18/6 |
| EBL31 | K | 13/9 |
| EC3 | K | 13/6 |
| EC52 | B9G | 13/6 |
| ECC32 | K | 18/9 |
| ECC34 | K | 18/9 |
| ECC35 | K | 19/6 |
| ECH2 | P | 16/6 |
| ECH3 | P | 17/6 |
| ECH35 | K | 17/6 |

Continued overleaf

# MULLARD VALVES —*Continued*

| Type. | Base. | Price. |
|---|---|---|
| EF36 | K | 14/6 |
| EF37 | K | 14/6 |
| EF39 | K | 11/9 |
| EF50 | B9G | 19/9 |
| EF54 | B9G | 19/9 |
| EF6 | P | 14/6 |
| EF9 | P | 13/9 |
| EK2 | P | 17/6 |
| EK32 | K | 19/6 |
| EL2 | P | 17/6 |
| EL3 | P | 14/1 |
| EL32 | K | 12/9 |
| EL33 | K | 14/1 |
| EL35 | K | 21/6 |
| EL37 | K | 22/9 |
| EM1 | P | 14/- |
| EM34 | K | 13/4 |
| EM4 | P | 14/- |

| Type. | Base. | Price. |
|---|---|---|
| FC13C | M | 19/- |
| FC2 | M | 19/6 |
| FC2A | M | 19/6 |
| FC4 | M | 19/6 |
| FW4/500 | A | 12/6 |
| IW4/350 | A | 12/2 |
| IW4/500 | A | 12/2 |
| KK2 | P | 16/6 |
| KL4 | P | 14/4 |
| PENA4 | M | 14/1 |
| PEN36C | M | 17/6 |
| PEN4DD | M | 18/6 |
| PEN4VA | M | 14/- |
| PEN428 | M | 17/9 |
| PM1HF | A | 12/3 |
| PM12M | A | 17/6 |
| PM2A | A | 10/9 |
| PM2B | M | 14/- |

| Type. | Base. | Price. |
|---|---|---|
| PM2HL | A | 11/6 |
| PM22A | O | 14/4 |
| PM24A | O | 17/6 |
| PM24M | O | 17/6 |
| SP13C | M | 12/- |
| SP2 | M | 19/3 |
| SP4 | O/M | 19/6 |
| TDD13C | M | 18/9 |
| TDD2A | O | 14/4 |
| TDD4 | M | 15/9 |
| TH21C | M | 20/- |
| TH3OC | M | 24/9 |
| TH4 | M | 13/- |
| TH4B | M | 24/- |
| URIC | O | 12/6 |
| VP13C | M | 17/9 |
| VP2 | M | 18/9 |
| VP2B | M | 19/6 |

| Type. | Base. | Price. |
|---|---|---|
| VP4 | M | 19/6 |
| VP4A | O/M | 19/6 |
| VP4B | M | 16/6 |
| 1561 | A | 11/7 |
| 1821 | A | 12/9 |
| 2D4A | O | 10/- |
| 2D4B | M | 10/6 |
| 354V | O | 12/11 |

### Definition of Bases

A = 4-Pin English
K = Octal
M = 7-Pin English
O = 5-Pin English
P = Side Contact
B7G = 7-Pin Amer. Miniature
B9G = 9-Pin (All Glass)

# PHILIPS VALVES

METAL CLAD "E" SERIES (6.3 volt A.C.) "P" BASE.

| | |
|---|---|
| EAB1—Triple Diode | 12/6 |
| EB4—Duo Diode | 10/3 |
| EBC3—Duo Diode Triode | 13/6 |
| EBF2—Duo Diode Penthode (Variable Mu) | 15/9 |
| EBL1—Duo Diode Output Penthode | 18/6 |
| ECH3—Triode Hexode Mixer | 17/6 |
| EF6—RF Penthode | 14/6 |
| EF8—Silenthode HF pre-amp. | 13/9 |
| EF9—HF, IF or LF Penthode | 13/9 |
| EK2—Octode (Self Neutralised) | 17/6 |
| EL2—Power Penthode | 17/6 |
| EL3—Power Penthode (High Mu) | 14/1 |
| EM1—Tuning Indicator | 14/- |
| EM4—Tuning Indicator (Double Sensitivity) | 14/- |
| EZ2—Full-Wave Vacuum Rectifier | 9/10 |
| EZ3—Full-Wave Vacuum Rectifier | 10/8 |

METAL CLAD "E" SERIES OCTAL BASE.

| | |
|---|---|
| EBC33—Duo Diode Triode | 12/2 |
| EBF32—Duo Diode Penthode | 15/9 |
| EBL31—Duo Diode Output Penthode | 13/9 |
| ECH35—Triode Hexode Mixer | 17/6 |
| EF39—HF, IF Penthode (Variable Mu) | 11/9 |
| EL33—Steep Slope Output Penthode | 14/1 |

METAL CLAD "A" SERIES (4 VOLT A.C.) "P" BASE.

| | |
|---|---|
| ABC1—Duo Diode Triode (4) | 14/1 |
| AF3—HF Penthode (Variable Mu) | 19/6 |
| AK2—Octode Frequency Changer | 15/9 |
| AL2—Power Penthode | 14/10 |
| AL3/4—Power Penthode (High Mu) | 12/3 |
| AZ1—Full Wave Rectifier (direct heating) | 9/- |
| AZ3—Full-Wave Rectifier | 9/- |
| AZ31—Full-Wave Rectifier, Octal Base | 9/- |

METAL CLAD SERIES (4 VOLT A.C.)

(English or American base indicated.)

See reference below.

| | |
|---|---|
| AB1—Duo Diode (2) | 10/1 |
| ABC1—Duo Diode Triode | 14/1 |
| ABL1—Duo Diode Power Penthode (High Mu) (4) | 14/4 |
| AF2—HF Penthode (2) (8) | 12/3 |
| AF6—HF Penthode (4) | 12/9 |
| AK2—Octode Frequency Changer (4) | 15/9 |
| AL4—Power Penthode (4) | 12/3 |
| B443—Power Penthode (1) (2) (5) | 18/4 |
| C443—Power Penthode (2) | 14/9 |
| E409—Triode Amplifier (2) | 13/3 |
| E415—Triode Amplifier (2) | 14/4 |
| E424—Special Det. Amp. (2) (6) | 14/4 |
| E438—High Gain Det. Amp. (2) | 14/7 |
| E442—S/g Amplifier (2) | 15/5 |
| E443H—Power Penthode (direct heating) (2) (6) | 15/11 |
| E444—Diode Tetrode (3) (4) | 13/10 |
| E446—HF Penthode (2) | 13/3 |
| E447—HF Penthode (Variable Mu) (4) (8) | 14/4 |
| E452T—S/g Amplifier (2) | 14/4 |
| E463—Power Penthode (4) | 12/1 |
| E499—Special High Gain Det. (2) | 12/3 |
| 506—Full Wave Rectifier (1) | 12/9 |
| 1561—Full Wave Rectifier (1) (5) | 11/7 |

METAL CLAD "C" SERIES (200 MA A.C.-D.C.) "P" BASE.

| | |
|---|---|
| CC1—Triode: Oscillator Amplifier | 13/3 |
| CF1—HF Penthode | 14/7 |
| CF2—HF Penthode (Variable Mu) | 14/7 |
| CF3—HF Penthode (Variable Mu) | 14/10 |
| CK1—Octode Frequency Changer | 14/4 |
| CL2—Power Penthode | 14/10 |
| CL4—Power Penthode (High Mu) | 17/6 |
| CY2—Full Wave Rectifier | 17/6 |
| CCH35—Triode-Hexode Mixer: Octal base | 18/- |
| CL33—Power Penthode: Octal base | 15/3 |
| CY31—Full-Wave Rectifier: Octal base | 12/1 |

METAL CLAD "K" SERIES (2 VOLT BATTERY) "P" BASE.

| | |
|---|---|
| KF3—HF Penthode (Variable Mu) | 14/7 |
| KK2—Octode Frequency Changer | 16/6 |
| KDD1—Twin Triode Output (Class B) | 14/4 |
| KL4—Power Penthode | 14/4 |

REFER BASE REFERENCE.

| | |
|---|---|
| KK2—Octode Frequency Changer (8) | 16/6 |

STANDARD D.C. TYPES.

(The first figure represents filament volts.)

| | |
|---|---|
| A409—General Purpose Triode (5) | 14/4 |
| A425—Triode Amplifier (5) | 13/10 |
| A442—S/g Amplifier (1) | 16/6 |
| A609—General Purpose Triode (5) | 13/10 |
| A615—Triode Detector Amplifier (5) | 13/10 |
| A642—S/g Amplifier (5) | 14/4 |
| B405—Power Triode (5) | 14/4 |
| B406—Power Triode (5) | 14/4 |
| B442—RF Tetrode (5) | 14/4 |
| B605—Power Triode (5) | 14/4 |

### Base References

(1) = English 4 pin (Cap A)
(2) = English 5 pin (Cap O)
(3) = English 6 pin (Cap B)
(4) = English 7 pin (Cap M)
(5) = American 4 pin (Cap G)
(6) = American 5 pin (Cap N)
(7) = American 6 pin (Cap J)
(8) = American 7 pin (Cap E)

# Frequency Changes of Broadcasting Stations in Australia and N.Z.

## EFFECTIVE 1st SEPT., 1948.

NEW ZEALAND STATIONS.

| Existing Stations: | Old. Freq. kcs. | Future Freq. kcs. | New Call-sign. |
|---|---|---|---|
| 1YA Auckland | 650 | 750 | |
| 4YZ Invercargill | 680 | 720 | |
| 3YA Christchurch | 720 | 690 | |
| 2YH Napier | 750 | 860 | 2YZ |
| 4YA Dunedin | 790 | 780 | |
| 2YB New Plymouth | 810 | 1370 | 2XP |
| 2YC Wellington | 840 | 650 | |
| 2YN Nelson | 920 | 1340 | 2XN |
| 3ZR Greymouth | 940 | 920 | 3YZ |
| 2ZJ Gisborne | 980 | 1010 | 2XG |
| 2YD Wellington | 990 | 1130 | |
| 2ZB Wellington | 1130 | 980 | |
| 4YO Dunedin | 1140 | 900 | 4YC |
| 3YL Christchurch | 1200 | 960 | 3YC |
| 4ZB Dunedin | 1310 | 1040 | |
| 2ZA Palmerston North | 1400 | 940 | |
| 3ZB Christchurch | 1430 | 1100 | |
| 1YX Auckland | 880 | 880 | 1YC |
| 1ZM Auckland | 1250 | 1250 | 1YD |
| 2ZM Gisborne | 1180 | 1180 | 2XM |
| 4ZD Dunedin | 1010 | 1430 | 4XD |

N.Z. Stations—Continued

| New Stations: | Old. Freq. kcs. | Future Freq. kcs. | New Call-sign. |
|---|---|---|---|
| Rotorua | — | 800 | 1YZ |
| Whangarei | — | 970 | 1XN |
| Timaru | — | 1160 | 3XC |
| Wanganui | — | 1200 | 2XA |
| Hamilton | — | 1310 | 1XH |

AUSTRALIAN STATIONS

| New South Wales: | | | |
|---|---|---|---|
| 2BH Broken Hill | 790 | 650 | |
| 2DU Dubbo | 660 | 1250 | |
| 2GN Goulburn | 1390 | 1380 | |
| 2NA Newcastle (National) | 820 | 1510 | |
| **Victoria:** | | | |
| 3BO Bendigo | 970 | 960 | |
| 3GI Sale (National) | 830 | 560 | |
| 3HA Hamilton | 1010 | 1000 | |
| **Queensland:** | | | |
| 4AY Ayr | 970 | 960 | |
| 4BH Brisbane | 1380 | 1390 | |

Australian Stations—Continued

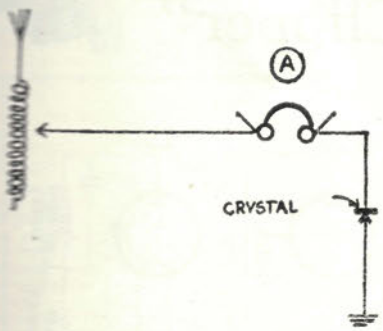
| | Old. Freq. kcs. | Future Freq. kcs. |
|---|---|---|
| 4CA Cairns | 1000 | 1010 |
| 4KQ Brisbane | 650 | 690 |
| 4MB Maryborough | 1000 | 1010 |
| 4MK Mackay | 1390 | 1380 |
| 4QB Pialba (National) | 560 | 910 |
| 4QG Brisbane (National) | 800 | 790 |
| 4QL Longreach (National) | 690 | 540 |
| 4QR Brisbane (National) | 940 | 590 |
| 4RK Rockhampton (National) | 910 | 940 |
| **South Australia:** | | |
| 5DN Adelaide | 960 | 970 |
| 5RM Renmark | 810 | 830 |
| **Western Australia:** | | |
| 6WN Perth (National) | 790 | 800 |
| **Tasmania:** | | |
| 7BU Burnie | 660 | 1250 |
| 7EX Launceston | 1000 | 1010 |
| 7ZR Hobart (National) | 1160 | 940 |

# NOVELTY RADIO PANELS FOR SMALL RECEIVERS

(By H. VERNON WHEATLEY)

ENOUGH has been written about our old friend the crystal set, and the variations of the circuit have been published so often as to make their repetition unnecessary. The main object of this chapter is to give our imagination a bit of scope.

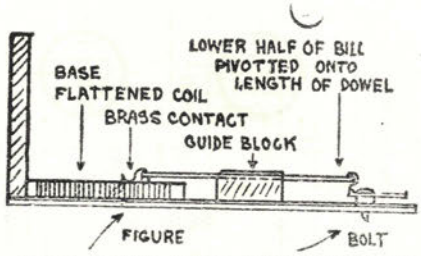
Taking the circuit shown below (A), or any other circuit of a similar nature for that matter, we now emulate the famous detective




and apply a disguise. This disguise may take any form your caprice suggests. Poaching on Mr. Walt Disney's preserves, we have Mickey Mouse, Donald Duck, etc., to help us out. Obtain a picture of one of Disney's creations and gum it on to a piece of plywood. Cut around carefully with a fret saw and mount on a small piece of board so that it stands upright. Two phone tip jacks are mounted in the two eyes and the rest of the components may be fixed to the back of the figure.

The coil may be wound on to a thin cardboard former and, when completed, squashed practically flat and then treated with varnish. This coil is mounted in such a position that it can be "tuned" by actuating the tail of Mickey, or in the case of Donald, the bottom half of his bill. The tail of Mickey is removed and after being suitably lengthened is bolted back on so that his tail moves up and down. The coil is then mounted so that the end of the lengthened tail moves across the coil (horizontally, of course). A small piece of brass to make the actual contact completes the tuning arrangement. See diagrams B and C.

Use a fixed or semi-fixed crystal detector and the construction is then straightforward. He makes a whimsical figure by your bedside and, of course, has the added advantage of being a disguised radio. Donald, as usual, proved to be a bit awkward, just like his real self, but we overcame his fractiousness by pivoting the bottom half of his bill. A piece of dowelling actuates the slide contact in this case, and is run through a guide, something after the style shown in diagram D.



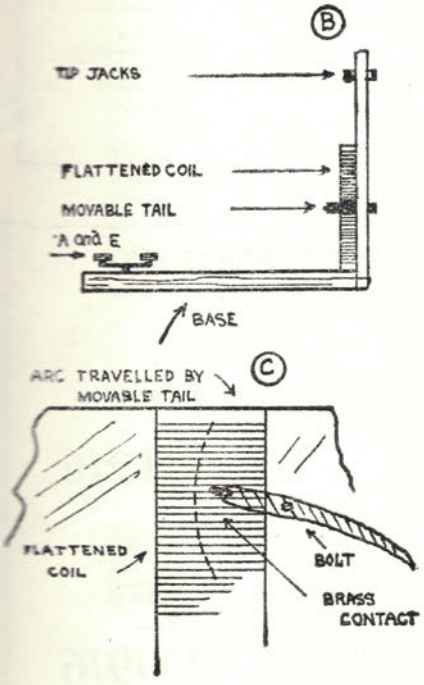

If you construct Donald, don't make the coil too long, because the movement is not as great as that of Mickey's tail and you may find that you are unable to slide across the entire coil. In addition to the two examples mentioned, Pinocchio, Horace Horsecollar, Pluto, the Seven Dwarfs, and, in fact, most of Disney's characters lend themselves admirably to this scheme. Being a little more ambitious and using a larger figure, single and two tube receivers may be similarly constructed with no difficulty at all, save for a little figuring out on your own account, You will find it gives you ample opportunity to indulge in a spot of mechanics at the same time, what with cams, pivots, guide blocks and so forth.

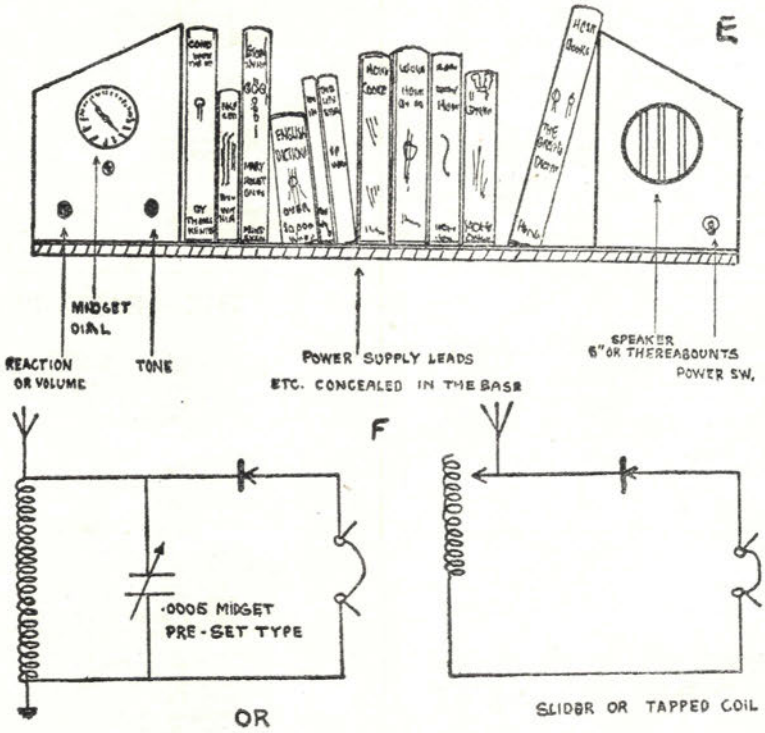
Wandering through department stores often will give you an idea for disguising a crystal set. A casien cigarette box and an ash-tray combined will accommodate a crystal set in the cigarette box portion, and you can still use the ash-tray for its appointed purpose. A bakelite shaving soap container is another article that can be readily adapted. The coil is wound on the outside and the terminals mounted at each end with the semi-fixed detector inside the case. This idea produces an excellent single-station receiver. Experiment with the coil until you find the exact number of turns which gives you maximum signal strength on your favourite station, and incorporate it into the circuit, thus eliminating a tuning device. If, of course, you have room for one or more tip jacks, you can use a tapped coil to give you maximum results on one or more stations. The longer you linger in the department store, the greater the number of disguises you'll be able to discover.

Avoid, if possible, metallic objects. If you do not fancy the simple circuit shown at the beginning of this article, there is no reason why you should not use any other circuit you particularly favour, providing, of course, it is not too bulky and is flexible enough mechanically to readily adapt itself to the suggestions outlined in this article.

There is only one piece of advice I can give and that is to invariably use a fixed or semi-fixed detector, as these types are usually fairly compact and compactness is a desirable quality in this case.

Providing you are competent with cabinet-maker's tools, you may undertake a more ambitious programme, and construct a pair of book-ends. Once more we apply the disguise. One end of the book end houses the receiver and the other end accommodates the telephones. Your favourite books are then supported by something not merely a pair of book-ends. Should you feel inclined you can build a valve receiver in one end and use the other end as a container for your batteries, or power supply and speaker. In fact, there are unlimited possibilities in a case of this nature. You can design your own book-ends and use the conservative touch or go to the extremes in super-streamlining, all depending on individual fancy.



TRY THESE NOVELTY PANELS WITH A FAMOUS

**"IMPROVED HIKER'S ONE" KIT SET.**

The amazing little 1-Valve Receiver that is just as popular now as when The Lamphouse brought it out in 1939.

Every Kit is supplied with FULL CONSTRUCTIONAL DETAILS.

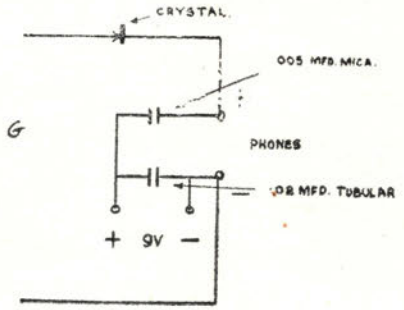
**Complete with Batteries (excluding Headphones)**

Cat. No. TK2004 .. **£2/11/6**

Something after the style of the above (E) will, if carefully made, enhance the appearance of any room, besides acting as a repository for an odd book or so.

Reverting to the crystal sets, the circuits given are best suited for the purposes described in this article. We must avoid bulky and complicated circuits as compactness and simplicity is the main thing we are aiming for.

The above two circuits (F) plus the one already given, are admirable for the purpose and any variation or combination of the three

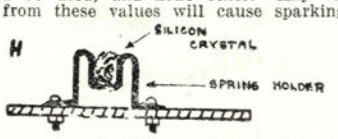



circuits is permissible. Coil: 90 to 100 turns of 26 or 28 g. D.C.C. or enamelled wire on a 1½in. former. If you are using the slider method of tuning, it is advisable to utilise enamelled wire in the construction of the coil.

In the event of your not having a crystal detector of the fixed or semi-fixed type, the use of an ordinary crystal detector is permissible, even though they will be a bit awkward to mount and adjust. Galena and pyrites crystals require a light cat's-whisker contact and therefor are susceptible to adjacent disturbances, so if you are prepared to put up with this minor disadvantage, go ahead. On the other hand, the silicon crystal, while not having the sensitivity of galena and pyrites, requires a heavier contact so it will not lose its adjustment so readily. It boils down to this—use any crystal you think fit.

Should you desire to "boost" your crystal set a little, try out the circuit given (G).

The condenser values shown are those which should be used, and none other. Any variation from these values will cause sparking at




the point of cat'swhisker contact, and, in time, the crystal will become covered with a high resistance deposit, thus rendering the crystal useless. Do not, on any account, use a galena or pyrites crystal, as these types fuse too readily and are useless for the job. A silicon crystal is the best type to use in this circuit, and the normal cat'swhisker should be replaced with a steel one. A piece of wire taken from a file card is admirable for the purpose, and a fairly heavy contact should be made on the crystal. If you can fit the crystal between two fairly heavy contact springs, it will be to your advantage. A suggestion for this is given in diagram (H).

Crystals operate only becau e they have the property of permitting a current to flow more readily in one direction than the other. Therefore they rectify, and since detection is rectification of radio frequencies, the crystals convert the received wave-trains into intermittent direct current.

TABLE OF CRYSTALS

| | |
|---|---|
| Haematite | Molybdenite |
| Hertzite | Silicon |
| Bornite | Ghane |
| Carborundum | Galena |
| Iron Pyrites | Teliurium |
| Malachite | Zincite |
| Cassiterite (or tin-stone) | Hessite |
| Copper Pyrites | Graphite |

# "Easy Built Clipper"

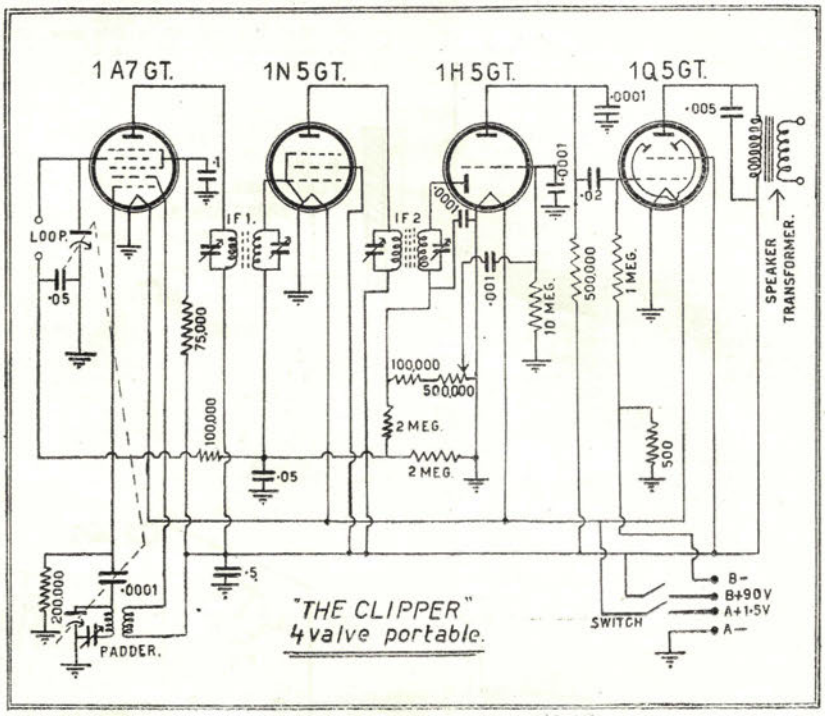



DIAGRAM "A"

## KIT OF PARTS

(For Condenser Tuned)

**"OXFORD" CRYSTAL SET**

including the following:

1 Crystal Detector.
1 Variable Condenser, .00035 mfd. or .0005 mfd.
1 3½in. x 2in. or 3½in. x 2½in. Coil Former.
2 Coil Feet.
1oz. 24-gauge S.C.C. or D.C.C. Wire.
1 Baseboard.
1 Panel.
1 Knob.
4 Fahnstock Clips.
1 Bulldog Clip.
Screws, Solder Lugs, Nuts and Bolts, etc.

**Complete with Constructional Details.**

Cat. No. TK2006 .. .. **19/11**

## THE "EASY BUILT CLIPPER" PARTS LIST

1 Chassis.
1 2-gang Variable Condenser.
2 "Ensign" 465 K.C. I.F. Transformers.
1 "Ensign" Oscillator Coil (Shielded).
1 "Ensign" Loop Aerial.
1 5in. Alnico Speaker.
1 1A7GT Valve.
1 1N5GT Valve.
1 1H5GT Valve.
1 1Q5GT Valve.
5 Valve Sockets.
1 Dial.
1 500,000 ohm Volume Control.
1 D.P.S.T. Toggle Switch.
9 Resistors.
4 .0001 mfd. Mica Condensers.
1 .001 mfd. Tubular Condensers.
1 .005 mfd. Tubular Condensers.
1 .02 mfd. Tubular Condenser.
2 .05 mfd. Tubular Condensers.
1 .1 mfd. Tubular Condenser.
1 .8 mfd. Electrolytic Condenser.
2ft. Battery Cable.
2 pkts. Hook-up Wire.
18 Nuts and Bolts.
1 Twin Tip Jack.
18 Solder Lugs.
2 Knobs.
3 Grid Clips.
1 Grommet.

**Complete Kit of Parts as above—**

Cat. No. TK2040 **£9/12/6**

**Batteries.**

2 45-volt Portable Batteries.
1 1½-volt "A" Battery.

**Complete Kit WITH BATTERIES—**

Cat. No. TK2040A **£11/9/6**

# The "Easy Built" Clipper Portable

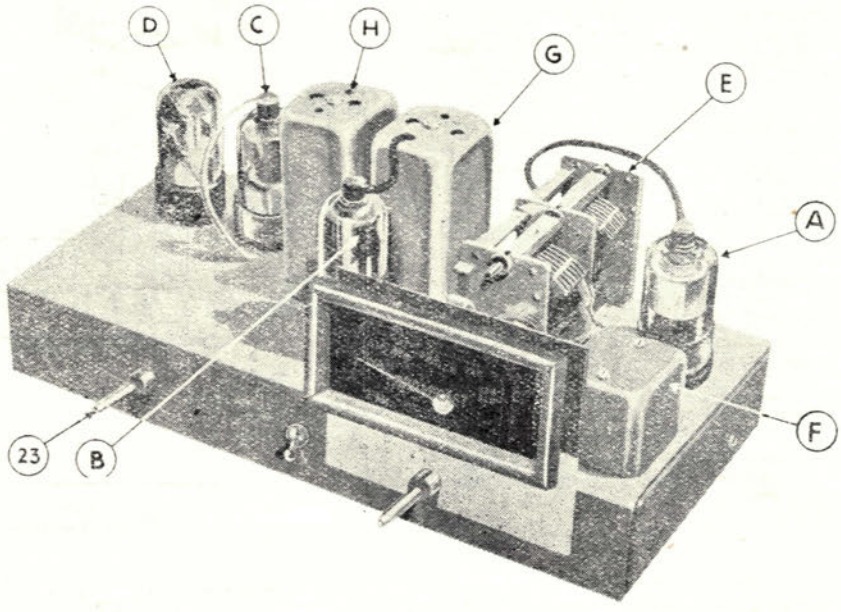
WE present again this year the now deservedly popular Clipper Four Portable. This receiver has many desirable features, including high gain iron cored I.F. transformers, a matched loop and self biased output stage. From the illustration you can see that the parts build up into quite a compact little job, the overall measurements being 9½in. x 4in. x 5in. high. The space on the chassis above the volume control gives clearance for the speaker when it is mounted in a cabinet.

Although this portable has proved one of our most popular kit sets to date we know that many more constructors would have liked to have built it, the one snag being they did not feel they had sufficient technical knowledge. It is for this reason we have decided to give it an "Easy Built" write-up.

The system we intend to use is the same as was used with great success in the "Easy Built Five", so if you can use a soldering iron, and are capable of following simple point to point connections even though your knowledge of radio theory may be nil, you can build the receiver. This we say without fear of contradiction.

Do you know a resistor? Can you distinguish it from a valve socket? Can you count up to 23? You can! Good! You can build this grand little set.

Have a look at the various diagrams. "A" is the circuit diagram; "B" shows the position of the parts above the chassis, and "C" shows the placement of parts underneath the chassis. We have also prepared two lists. The first lists alphabetically the valve sockets and various parts that are mounted to the chassis by means of nuts and bolts. The second list numbers the condensers and resistors which are mounted underneath the chassis.




## CONSTRUCTIONAL DETAILS

Mount the four valve sockets and make sure the "key," or notch, points the same way as shown in the diagram. On each of the bolts that go through socket "A" place a solder lug before putting on the nuts.

Socket "B" has one lug placed on bolt nearest front of chassis. Sockets "C" and "D" a lug also on bolt nearest front of chassis.

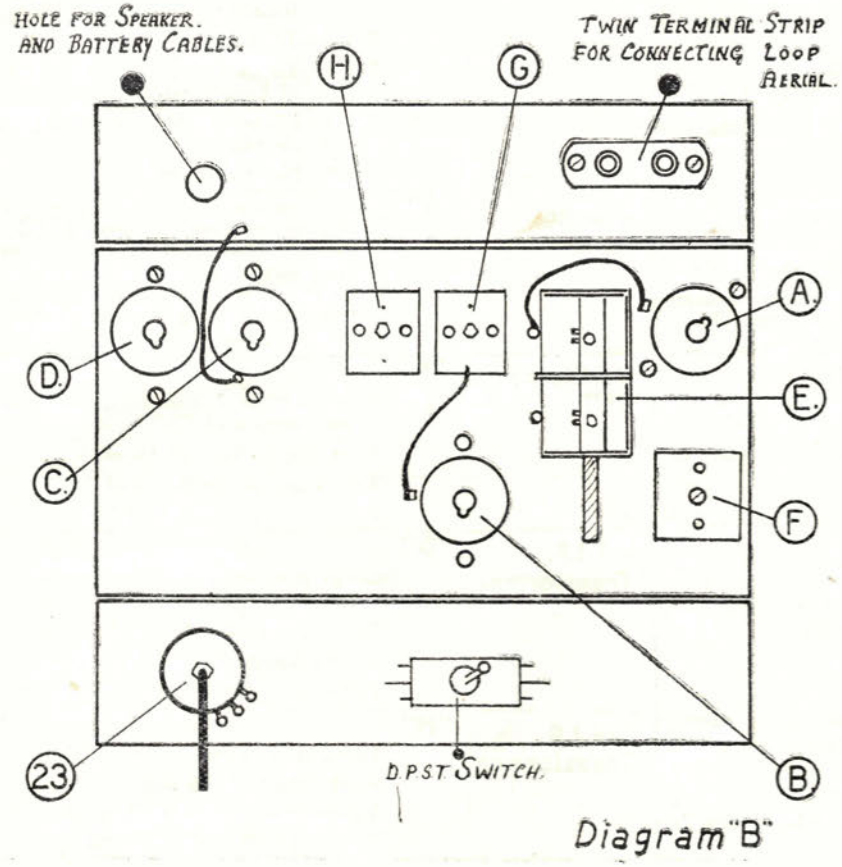



Diagram "B"

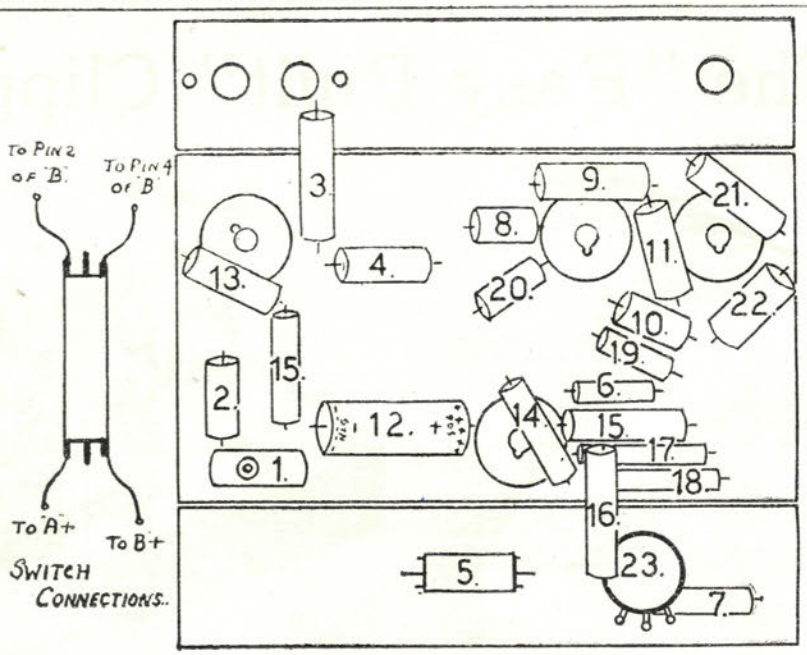
These lugs are used as earthing points for the various small parts, so make sure the bolts are contacting the metal of the chassis and not just resting on the paint. Now, before mounting the tuning condenser (E) solder a length of push back wire on to the bottom lugs coming from the fixed plates of each section of the gang. Both of these lengths should be about 4½in. long. Thread these wires through their respective holes in the chassis and bolt the condenser in place. Also on to the top lug of the rear section of the condenser gang solder a 5in. length of wire the other end of which has a grid clip soldered to it which goes on to the cap of the 1A7 GT valve. But don't worry about that yet. Mount now the rest of the parts. The oscillator coil (F) mounts on the front right hand corner and the two I.F. transformers (G and H) mount side by side. The transformer with the lead coming out the top of the can is known as the first I.F. (G) and mounts next to the condenser gang, and before bolting in place put a solder lug under the rear nut. When fitting the second I.F. transformer (H) put an additional nut on the mounting lug nearest the front of the chassis, place the one lug anchoring strip provided over this and secure it by means of a third nut. This strip is used later as a junction for the black lea of "H" which is the second I.F. transformer and also 6 which is a .0001 condenser 16 and 17 100,000 ohm and 2 megohm resistors respectively. Mount now the twin terminal strip which mounts at the rear of the chassis and almost directly below socket "A". Next mount the switch and volume control (23) but do not tighten up the nuts as you will want to solder leads on to the various contacts and may need to turn them to get at the lugs. Try the dial in place, now make sure it will turn smoothly, then remove it and replace later when all the wiring is done.

Now for some work under the chassis. First solder one end of your hook-up wire on to the appropriate lug on the switch (see diagram of switch connections) and allow enough wire to reach pin No. 2 of socket "B" and cut off.

Cut an 8in. length of wire now and solder one end together with the lead from the switch on to pin No. 2 of socket "B". A 3in. length of wire now and solder it with the free end of the 8in. length on to pin No. 2 of socket "D." Another 8in. length is cut now and soldered on to pin No. 2 of socket "C" with the spare end of the 3in. length. We now should have only one free end left which is soldered on to pin No. 2 of socket "A." Now earth pin No. 7 of each of these sockets on to their respective solder lugs by means of short lengths of wire. Keep all of these leads flat on the chassis.

Now by referring to the various lists we feel sure you will have no trouble in wiring up the rest of the set. Wire up the leads from your tuning condenser and the I.F. transformers and then work round to the various small parts. By ticking off the individual connections on the lists as you go along you can be sure all the necessary joints have been made.

When all your wiring is done recheck against the list again. Wire up your speaker now to pins Nos. 3 and 4 of socket "D." Your battery cable also, the A+ and B— leads going to the switch (see diagram). The A— lead is earthed to a suitable lug and the B— lead goes on to pin No. 6 of "D." Your loop aerial leads go on to the two terminals at the back of the chassis. Having made sure your A and B batteries are connected correctly the time has arrived to try the set out. Let us stress, however, the importance of checking on your battery connections, as many a set of valves has been ruined by the over-confident hooking up of batteries without a proper check of connections. With all the valves in their correct sockets and grid leads in place tune in a station in the vicinity of 1300 kcs. and adjust the trimmers on the condenser gang for best results. Now, at the other end of the dial tune in a station and adjust the padder condenser for maximum signal. This is rather a rough and ready method and we strongly advise having the set aligned by a qualified serviceman. Remember your loop is highly directional and must be pointed toward the incoming signal for best results. Should any of the details be not quite clear to you our technical staff will willingly endeavour to clear up the points in question for you.




— UNDER CHASSIS VIEW. —

— Diagram "C."

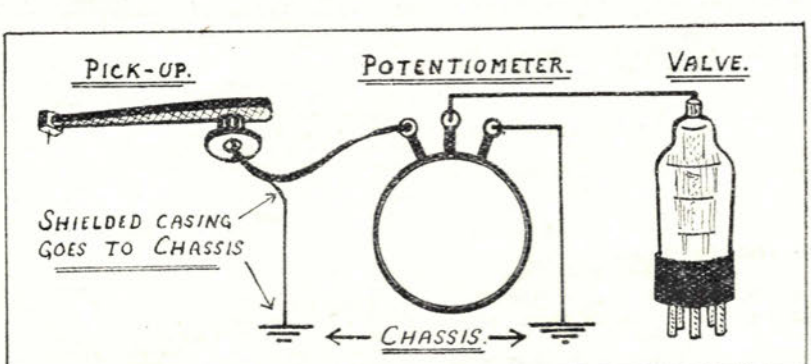
# CONNECTIONS TO BE MADE

| | | |
|---|---|---|
| **1A7GT Socket** | **"A"** | |
| | | Pin 1—No connection. |
| | | Pin 2—Filament Pin (see Text). |
| | | Pin 3—To yellow lead of "G". |
| | | Pin 4—To 4 and 15. |
| | | Pin 5—To 2 and 13. |
| | | Pin 6—To yellow lug of "F." |
| | | Pin 7—Filament pin earthed to chassis |
| | | Pin 8—No connection. |
| **1N5GT Socket** | **"B"** | |
| | | Pin 1—No connection. |
| | | Pin 2—Filament pin (see Text). |
| | | Pin 3—To yellow lead of "H". |
| | | Pin 4—To positive end of 12 red lug of "F", Pin 4 of "D" and 20 red leads of "G" and "H." |
| | | Pin 5—To right hand lug on twin terminal strip. |
| | | Pin 6—Used as junction for 5, 14, 17, 18 and black lug of "G.' |
| | | Pin 7—Filament pin earthed to chassis. |
| | | Pin 8—No connection. |
| **1H5GT Socket** | **"C"** | |
| | | Pin 1—No connection. |
| | | Pin 2—Filament pin (see Text). |
| | | Pin 3—To 8, 9 and 20. |
| | | Pin 4—No connection. |
| | | Pin 5—To green lead of "H." |
| | | Pin 6—No connection. |
| | | Pin 7—Filament pin earthed to chassis. |
| | | Pin 8—Used as junction for lead from grid cap of 1H5GT, also 7, 10, and 19. |
| **1Q5GT Socket** | **"D"** | |
| | | Pin 1—Earthed and used as earthing lug for 10, 19 and 22. |
| | | Pin 2—Filament pin (see Text). |
| | | Pin 3—To 11 and one lead of speaker transformer. |
| | | Pin 4—To Pin 4 of "B", 11, and other lead of speaker transformer. |
| | | Pin 5—To 9 and 21. |
| | | Pin 6—To 21 and 22, also B— lead of battery cable. |
| | | Pin 7—Filament pin earthed to chassis. |
| | | Pin 8—No connection. |
| **2 Gang Condenser** | **"E"** | Lead from top lug on fixed plates of rear section goes to cap of 1A7GT valve. Lead from bottom lug of same section goes to left hand lug of the twin terminal strip. Lead from bottom lug of front section goes to green lug of "F." |
| **Oscillator Coil** | **"F"** | |
| | | Green lug to 2 and bottom lug of front section of "E." |
| | | Black lug to fixed plates of 1. |
| | | Yellow lug to pin No. 6 of "A." |
| | | Red lug to pin No. 4 of "B." |
| **1st I.F. Transformer** | **"G"** | |
| | | Green lead from top of can goes to cap of 1N5GT valve. |
| | | Black lead to Pin No. 6 of "B." |
| | | Yellow lead to Pin No. 3 of "A." |
| | | Red lead to Pin No. 4 of "B." |
| **2nd I.F. Transformer** | **"H"** | |
| | | Green lead to Pin No. 5 of "C." |
| | | Black lead to 6, 16 and 17. |
| | | Yellow lead to Pin No. 3 of "B." |
| | | Red lead to Pin No. 4 of "B". |

# SMALL COMPONENT CONNECTIONS TO BE MADE

| *Condensers* | *No.* | |
|---|---|---|
| **Padder** | 1 | Fixed Plates to black lug of "F". |
| | | Moving plates earthed. |
| **.0001 Mica** | 2 | To Pin No. 5 of "A". |
| | | To green lug of "F". |
| **.05 Tubular** | 3 | Right hand lug of twin terminal strip. |
| | | Earthed to chassis. |
| **.1 Tubular** | 4 | To Pin No. 4 of "A". |
| | | Earthed to chassis. |
| **.05 Tubular** | 5 | To Pin No. 6 of "B". |
| | | Earthed to chassis. |
| **.0001 Mica** | 6 | To black lead of "H". |
| | | Earthed to chassis. |
| **.001 Tubular** | 7 | To Pin No. 8 of "C". |
| | | To centre lug of 23. |
| **.0001 Mica** | 8 | To Pin No. 3 of "C". |
| | | Earthed to chassis. |
| **.02 Tubular** | 9 | To Pin No. 3 of "C". |
| | | To Pin No. 5 of "D". |
| **.0001 Mica** | 10 | To Pin No. 8 of "C". |
| | | Earthed to chassis. |
| **.005 Tubular** | 11 | To Pin No. 3 of "D". |
| | | To Pin No. 4 of "D". |
| **8 mfd Electrolytic** | 12 | Positive (+) end to Pin 4 of "B". |
| | | Negative (—) end earthed to chassis. |

| *Resistors* | *No.* | |
|---|---|---|
| **200,000 ohm** | 13 | To Pin No. 5 of "A". |
| | | Earthed to chassis. |
| **100,000 ohm** | 14 | To Pin. No. 6 of "B". |
| | | To Pin No. 5 of "B". |
| **75,000 ohm** | 15 | To Pin No. 4 of "A". |
| | | To red lug of "F". |
| **100,000 ohm** | 16 | To black lead of "H". |
| | | To right hand lug of 23. |
| **2 megohm** | 17 | To black lead of "H". |
| | | To Pin No. 6 of "B". |
| **2 megohm** | 18 | To Pin No. 6 of "B". |
| | | Earthed to chassis. |
| **10 megohm** | 19 | To Pin No. 8 of "C". |
| | | Earthed to chassis. |
| **500,000 ohm** | 20 | To Pin No. 4 of "B". |
| | | To Pin No. 3 of "C". |
| **1 megohm** | 21 | To Pin No. 5 of "D". |
| | | To Pin No. 6 of "D". |
| **500 ohm** | 22 | To Pin No. 6 of "D". |
| | | Earthed to chassis. |
| **.5 megohm Vol. Control** | 23 | Right hand lug to 16. |
| | | Centre lug to 7. |
| | | Left hand lug earthed to chassis. |




## CONNECTING A PICK-UP TO YOUR RADIO

The following simple illustration and instructions show how easy it is to fit a Pick-up to your radio. The valve to which the connection is made in the set is the Detector tube. On most sets this tube is a shielded one usually enclosed in a valve can with a grid clip on top and is situated in the majority of cases next to the two valves without grid clips.

The following is a list of the most commonly used Detector tubes: Type 24A, 57, 55, 6C6, 6B7, 2B7, 75, 6Q7, 6B8, 6J7. The grid clip of this tube to which a wire is already connected is removed and in its place the lead from the centre lug of the volume control is fitted, preferably by means of a detachable grid clip.

One of the outside lugs of the volume control goes to earth while the other goes to the Pick-up Lead. The shielded casing of the Pick-up Lead or the second wire as the case may be goes to earth.

Earth refers to the metal chassis of the radio.

# A "SIMPLE U.H.F. CONVERTER"

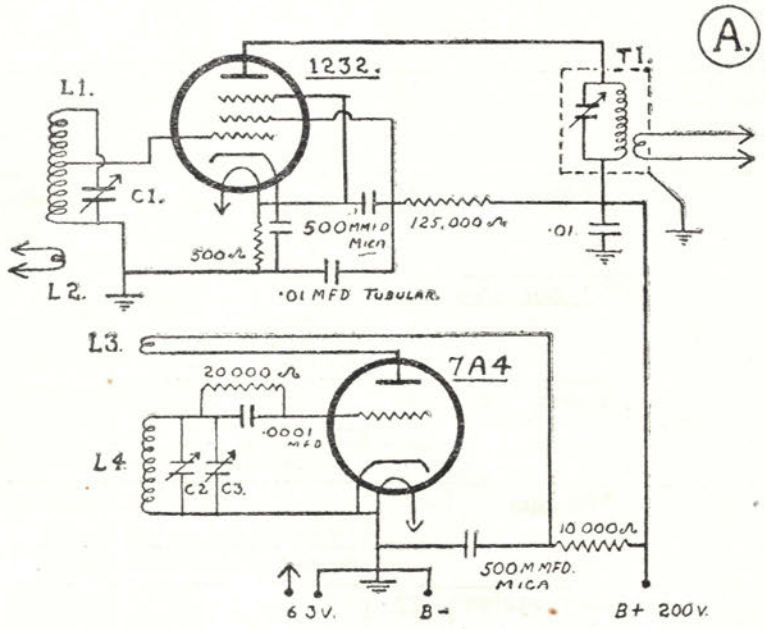
*HERE is an excellent U.H.F. Converter for use over the popular U.H.F. Ranges of 56 and 112 Megacycles. An ideal unit for the "Ham." Also an excellent proposition for constructors who wish to make this addition to an ordinary Broadcast Receiver to enable stations on the 5 Metre Band to be received at good strength.*

By H. CAVALLARO

THIS simple converter covers the popular U.H.F. ranges of 56 and 112 megacycles and uses a type of 1232 loktal tube for the mixer and a type 7A4 for the H.F. oscillator, which proves to be a very happy combination. The close grouping of the coil and tube sockets and the tuning condenser ensures a low circuit capacity which is essential for 112 mc operation.

Sketch A shows the circuit. The grid of the mixer is tapped down the coil to reduce loading on the circuit and obtain a better gain in the stage. The oscillator plate circuit permits a directly earthed cathode to ensure a minimum of hum on the signal.

ground to the chassis for the oscillator circuit and that through the oscillator tuning condenser. The mixer tuning condenser is mounted on the right-hand side of the chassis and earths the mixer at that point. The shafts of the two circuit tuning condensers pass through insulated bushings on the panel (if the couplings themselves are not insulating) to avoid duplication of earthing points. The panel and sides are not finally fitted until all the wiring is completed.




— U.H.F. CONVERTER.

The oscillator tuning condenser is wired in parallel with a band-set condenser. The converter can be set to the desired frequency band, the mixer condenser turned to the point of greatest noise and then the tuning is done with the small oscillator condenser. When a signal is received, the mixer may be "peaked" again, but this is not often necessary over the range of the band-spread condenser. "Pulling" is at a minimum by reason of the loose coupling.

Condenser details:—

C1—15 mmfd. variable.
C2—35 mmfd. variable.

C3—10 mmfd. variable, with one each of the rotor and stator plates removed.

As you can see by sketch B1, the chassis and panel is made more or less to form a two compartment box, the panel being made longer than chassis solely to place the tuning condenser in a central position. The panel measures 6 x 8 inches. The "box" chassis has a 4-inch wide top and the depth is 4 inches also. The length of the chassis is 5½ inches. The shield which separates the two circuits is fixed to make the oscillator compartment 2¾ inches wide. This shield mounts the oscillator tuning condenser C3 and the C2 band-set condenser is mounted on the right-hand side of the chassis. The band-setter is insulated by means of fibre washers, thus making a "one point"

Coil details:—

T1.—112 m/c.: 75 T. No. 30 D.S.C. closewound. Coupling coil is 20 T. No. 30 D.S.C. Closewound ⅛in. from ground end of coil.

56 m/c.: 45 T. and 14 T. as above.

L1.—112 m/c.: 2¼ T. No. 20 enam. ⅜in. dia. spaced wire dia. Tap ¾ T. from top.

56 m/c.: 4½ T. No. 20 enam. ¾in. dia. spaced over ½in. Tap 1½ T. from top.

L2.—112 m/c.: 3 T. No. 20 enam. ¼in. dia. closewound one wire dia. below "cold" end of L1.

56 m/c.: 3 T. No. 24 enam. closewound ⅛in. below L1.

L3.—112 m/c. 1 T. No. 20 enam. ¼in. dia. three wire diameters below L4.

56 m/c.: 1½ T. No. 24 enam. closewound ⅛in. below L4.

L4.—112 m/c. ⅞ T. No. 20 enam. ⅜in. dia.

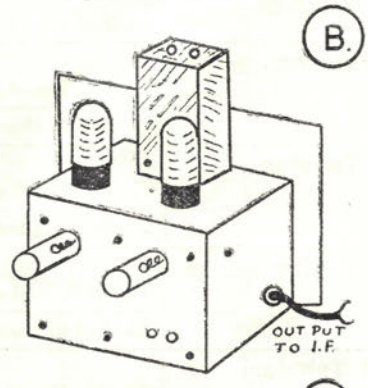
56 m/c.: 1¾ T. No. 20 enam. spaced over ¼in.

Before we go any further, it should be noted that the lead run from the grid of the type 1232 tube to the through-bushing on the partition shield is not connected on the oscillator side, since enough capacity exists between the bushing and the oscillator circuit wiring. Any R.F. leads and leads from by-pass condensers are kept as short as possible.

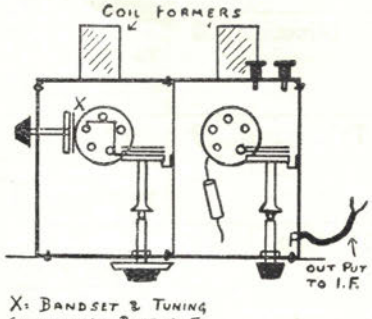
### COIL CONSTRUCTION

Coil formers are ¾in in diameter, preferably of polystyrene.

Coil for the 5 metre range is wound on the outside of the former in the usual fashion, and no trouble is experienced in finding the 5 metre band as the tolerance on this coil is rather wide. Care is exercised when soldering wire to former pins as excessive heat is liable to loosen the pins. An iron with a small bit is admirable, so as to localise the applied heat. If by any chance a pin becomes loose, it may be reset by heating the pin with the iron and holding the pin with pliers until it cools—without movement, of course.




REAR VIEW. (1)




X= BAND SET & TUNING CONDENSERS BUTT ON TO EACH OTHER FOR SHORT LEADS.

UNDERSIDE VIEW (2)

The 2½ metre coils are wound **inside** the coil formers. The former is sawn off near the base and the coils soldered on to the base. Once the coils are adjusted by spreading the turns, the former proper is replaced on the base by adhesion with coil cement.

This rule is followed for the oscillator coil: If both grid and plate coil are wound in the same direction, the grid and plate connections come off the opposite ends—in this case, the outside ends. The connections on the oscillator coil, viewing from the bottom, are (commencing with the oddly-spaced pin and going clockwise): plate, earth, B +, grid and blank. The mixer coils are: grid, tuning condenser, aerial, aerial and ground. Both mixer and oscillator coils are mounted with the odd pin at the top.

No trouble will be encountered in making the oscillator operate on any of the ranges if all the leads have been kept to a minimum length. For the 112 m/c band, the oscillator band-set condenser will be at a minimum capacity, but will be set at mid-scale for the other range, varying slightly with the I.F. used.

(Continued on page 75)

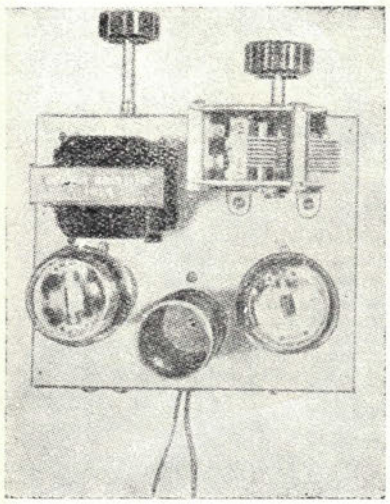
# "THE OCTAL HIKER'S TWO"

**So popular last year that we've just had to repeat it again in this year's "ANNUAL"!**
**This Set is actually a combination of the Hiker's One and Amplifier and is a proven circuit.**

### DESCRIPTION

THIS set, which will bring in the more powerful stations at speaker strength, is primarily intended for those who have previously made a 1-valve receiver, such as the Hiker's One and now seek new worlds to conquer. The Octal Hiker's Two provides a very neat little set on a metal chassis. It gives a taste of set building in the more advanced manner with all the wiring underneath the chassis.

The circuit actually represents the Octal Hiker's One and Amplifier as one unit and makes use of the metal of the chassis for most of the earth connections.



The chassis is made of 20g. steel plate 11in. x 6in. The front and back are 2½in. deep, so that when they are bent over the top measures 5in. x 6in. A ready-drilled chassis is supplied with each of our Kits.

One and a-half inch holes are cut for the four sockets, while the size of the hole for the grommet washer—through which the aerial and earth wires come, the potentiometer spindle, tip jack, etc.—depends upon the size of the components that are used.

### WIRING DETAILS

The wiring is not at all difficult and is commenced after all the components are bolted down on the chassis and the necessary holes drilled to take the wires through the chassis to the transformer and condenser.

Two colours of pushback wire are supplied with the Kit Set, one can be used as the aerial lead and one as the earth. The wire selected for the earth lead should be soldered direct to the chassis. To do this, first scrape the chassis clean at the point at which the wire is to be attached, apply a little flux and then hold the iron against the metal until it is hot enough to take the solder. Once the solder flows and "tins" the metal, the iron is removed, leaving a small "blob" of solder. It is essential that the metal be properly tinned so that there is a satisfactory earth.

The red wire is soldered to No. 1 on the coil socket.

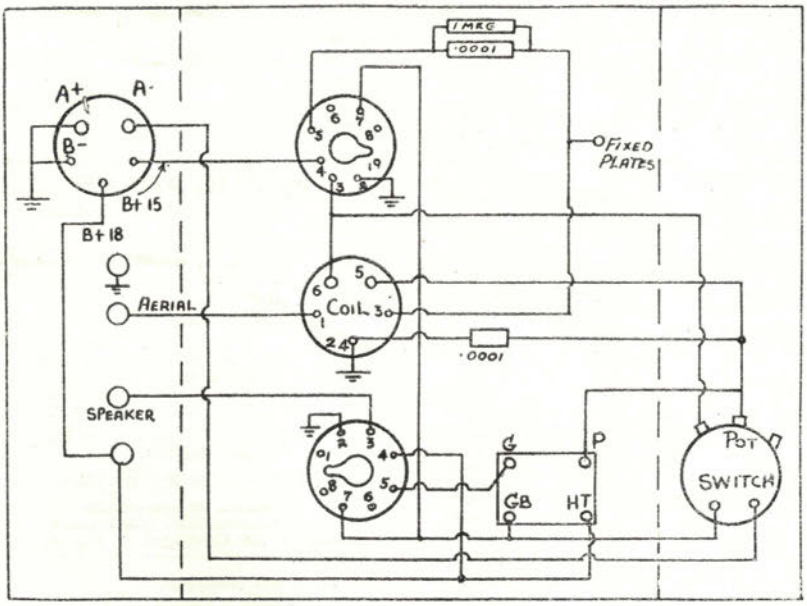
A soldering lug is bolted tightly under each valve socket to provide an earth connection to which the No. 2 clip is soldered in the case of each valve. There are no connections made to Pins Nos. 1 and 8 on either valve socket. A + and B — on the battery socket are joined together and then connected to the earth lug, while the isolated prong on the coil socket, to which No. 2 and No. 4 coil ends are attached, is connected to the earth lug on this socket.

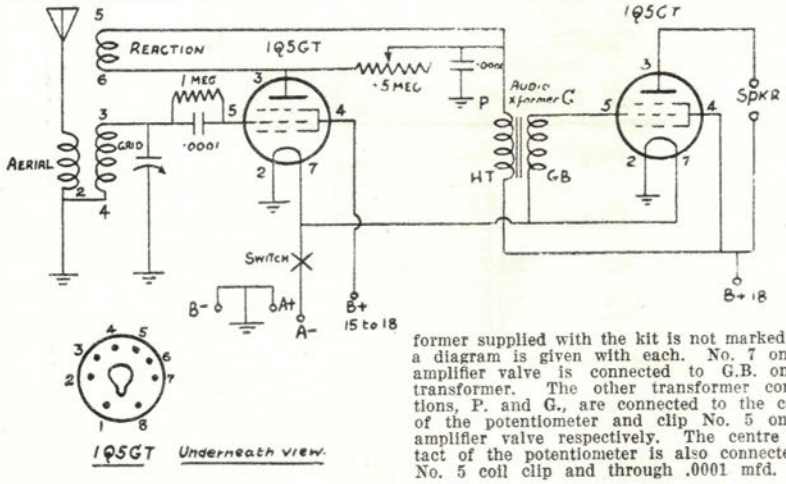
A — on the battery socket is connected to one side of the switch, the other being connected to Clip No. 7 on each valve socket. B + 15 goes to No. 4 on the detector valve socket and B + 18 to one speaker terminal and thence to H.T. on the transformer, also to pin No. 4 on amplifier socket. The audio transformer supplied with the kit is not marked, but a diagram is given with each. No. 7 on the amplifier valve is connected to G.B. on the transformer. The other transformer connections, P. and G., are connected to the centre of the potentiometer and clip No. 5 on the amplifier valve respectively. The centre contact of the potentiometer is also connected to No. 5 coil clip and through .0001 mfd. mica condenser to the nearest earthed solder lug. The left-hand lug on the potentiometer is connected to No. 3 on the detector valve, which clip is also connected to No. 6 on the coil.

The 1 meg. resistor and remaining .0001 mfd. mica condenser have their pigtails twisted together and soldered, and are connected between No. 5 on the detector valve and No. 3 on the coil socket, which is also connected to the fixed plates of the condenser. It will probably be easier to solder the wire to the terminal on the condenser before it is bolted to the chassis, and then to cut the wire to length and solder it to the coil clip. The remaining speaker terminal is connected to No. 3 on the amplifier socket. This completes the wiring.

In connection with the Coil, the ends of the coil windings are threaded through the appropriate prong on the former, and the

(Coil Data Continued on Page 75)




## PARTS LIST

1 Chassis
1 3 : 1 Audio Transformer
1 Single Gang Tuning Condenser
2 1Q5GT Valves
4 Valve Sockets
1oz. 32 gauge Wire
1 5-pin Plug-in Coil Former
1 ½ meg. Potentiometer with Switch
1yd. 5-wire Battery Cable
1 5-pin Battery Plug
2 .0001 Mfd. Mica Condensers
1 1 megohm Carbon Resistor
1 Twin Tip Jack
2 Coils Hook-up Wire
2 Knobs
2 9v. ("B" Batteries)
1 1½v. No. 6 Cell ("A" Battery)
SUNDRIES: Nuts, Bolts, Solder Lugs, Grommet, etc.

**Complete Kit of Parts as above—**
Cat. No. TK2031 .. **£4/12/6**

**SPEAKER**
**The ideal Speaker for use with above is the "ALNICO 5" 5-inch Permanent Magnet.**
Complete with 5000 ohm. Transformer.
Cat. No. TS950 .. .. **24/11**

# THE DUAL WAVE "SUPER SIX"

THE circuit calls for a three-gang condenser, aerial, R.F., and oscillator coils and two I.F. transformers. A factory-made dual-wave unit is recommended in preference to home assembly, on account of the complicated wiring. An "Ensign" Dual Wave Unit is supplied with each Dual Wave Kitset.

The tubes specified are all standard American types, and the circuit is a standard hook-up without any fancy tricks or short cuts. Automatic volume control is used, but is not applied to the converter tube, type 6K8. This is in keeping with modern practice and helps to keep the oscillator section of the tube stable. If it is desired to apply A.V.C. to this tube, the bottom end of the mixer grid-coil may be connected to the A.V.C. line similarly to the grid of the 6K7 R.F. amplifier.

The circuit specifies a (385) volt transformer and an electro-dynamic speaker with 1500 ohms field-coil. If a permanent magnet speaker is used, a 1500 ohm 25 watt resistor replaces the field coil. The receiver is not recommended for constructors building their first set, but may be built successfully by any amateur who has had experience of building small sets. There are more components to solder into position, but care to maintain a neat lay-out and plenty of time for building will ensure reliable performance. The fundamental rules of short grid-leads and the flattening of all audio and power leads down against the chassis are important. The audio lead to and from the volume control must be shielded, but R.F. leads, such as from the 6K7 plates to the I.F. transformers should be short and direct and kept off the chassis. Each of the by-pass condensers should be soldered close up to the points they by-pass, such as the .1 mfds. condensers at the B+ terminals of the I.F. transformers. Another helpful idea is to run a heavy wire or a length of aerial wire around the chassis for earthing, grouping the earth connections for each valve close to the valve socket. It is not advisable to rely on indiscriminate earthing to the chassis for dual-wave operation with six tubes.

## CONSTRUCTIONAL DETAILS

The assembly of this set is not at all difficult for the size. For those who have not had much practical experience we give the majority of the connections to aid in the building up.

**Type 80 Valve:**

The 2 large pins are the filament pins and are connected to the 5-volt winding on the power transformer. Usually power transformers are marked or colour-coded for the various different tappings.

## By F. H. ADAMS

The two small pins of this valve are connected to either side of the 385 volt winding on the power transformer.

**Type 6V6 Valve:**

Pin No. 1 goes to Earth.

Pin No. 2 connects to one side of the 6.3 volt winding on the Power Transformer, and thence to Pin No. 2 of the 6Q7 Valve, Pin No. 2 of 6K7 (I.F. tube), Pin No. 2 of 6K8 and Pin No. 2 of 6K7 (R.F. Tube).

Pin No. 3 connects to Speaker Socket. (See note on Speaker Socket).

Pin No. 4 connects to B+ 250 volts.

Pin No. 5 connects to one outside lug on the ½ meg Potentiometer (Tone Control) and through a .05 Condenser to Pin No. 3 of the 6Q7.

Pin No. 6 not connected.

Pins No. 7 and 8 are Earthed, and to other side of 6.3 filament winding.

Between Pins No. 3 and 4 connect a .006 mfd. Fixed Condenser.

**Type 6Q7 Valve:**

Pin 1 goes to Earth.

Pin 2 (see Pin 2 of 6V6).

Pin 3 connects through a .25 megohm Resistor, and a .1 megohm Resistor joined in series to B+ 250 volts. Connect a .1 mfd. Condenser between junction of above Resistors and earth. Also connect from this pin a .00025 mfd Mica Condenser to Earth.

Pin 4 connects to green lead from second I.F. Transformer.

Pin 5 goes through .0001 mfd. Condenser to Pin No. 3 of the 6K7 (I.F. Valve).

Pin 6 goes through 10 meg Resistor to Chassis and also through .005 mfd. Condenser to centre lug of ½ meg Potentiometer (Volume Control). Also take a piece of shielded wire and connect one end to this Pin, then push through Chassis and connect grid clip for top cap of this tube.

Pins No. 7 and No. 8 are Earthed.

**Type 6K7 Valve:**

Pin. No. 1 goes to Earth.

Pin No. 2 (see No. 2 6V6).

Pin No. 3 to yellow lead of second I.F. Transformer.

Pin No. 4 through a .1 mfd. condenser to Earth and also through a .1 megohm resistor to B+ 250.

Pin No. 5 goes to Earth.

Pin No. 6 no connection.

Pins No. 7 and No. 8 are Earthed.

**Type 6K8 Valve.**

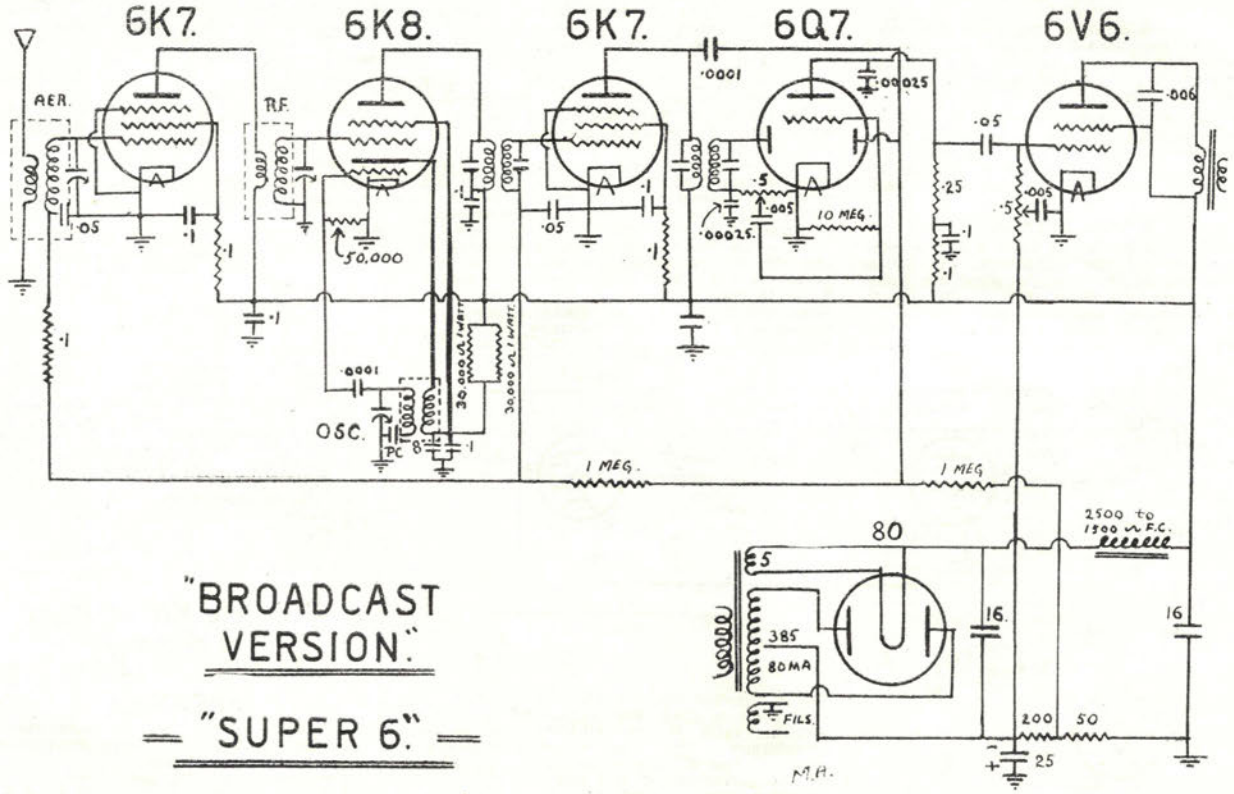
Pin No. 1 goes to Earth.

Pin No. 2 (see No. 2 pin 6V6).

Pin No. 3 goes to yellow lead of first I.F. Transformer.

Pin No. 4 connects to the junction of oscillator coil on coil box and two 30,000 ohm resistors which are connected in parallel from this point to B+ 250v. Between the junctions mentioned above and chassis, connect an 8 mfd and a .1 mfd. Condenser in parallel.

Pin No. 5 goes through a 50,000 ohm resistor to Earth and also through .0001 mfd mica




**The illustration above shows the "Super Six" as Broadcast Receiver. To convert to Dual Wave an "Ensign Coil Box" is added. Full instructions and Colour Code for fitting are given with each unit.**

condenser to oscillation grid lead on coil box. Also from the latter point connect a lead to fixed plates rear section of gang condenser.

Pin No. 6 connects to oscillator plate lead on coil box.

Pins No. 7 and No. 8 are Earthed. The grid cap connects to fixed plates, middle section of Gang Condenser. Top cap to R.F. grid lead on coil box and fixed plates middle section of gang condenser.

**Type 6K7 Valve (R.F.):**

Pin No. 1 goes to Earth.

No. 2 pin (see No. 2 pin 6V6).

No. 3 pin connects to R.F. plate lead from coil box.

No. 4 pin goes through .1 mfd condenser to chassis and .1 resistor to B+ 250 volts.

Pin No. 5 to Earth.

Pin No. 6 no connection.

Pins No. 7 and No. 8 are connected to Earth. The grid cap of this valve is connected to the fixed plates of the first section of the Gang Condenser and to grid lead aerial section coil box.

Now to complete the wiring: from one filament pin of the type 80 valve, connect positive end of a 16 mfd. Condenser and take a lead from this point to one of the thick pins of the speaker socket. The other end of the 16 mfd. condenser should be connected to centre tap of H.T. winding of Power Transformer. Between the centre tap and chassis a 250 ohm tapped bias resistor is connected. Across this resistor connect a 25 mfd. condenser with the positive end to chassis. Now connect a lead between the centre tap of high tension winding on power transformer and other outside lug of tone control. Between the centre lug of tone control and chassis a .005 mfd. condenser is connected.

The wiring is now completed except for the A.V.C. line; this is connected as follows: From tap on bias resistor connect a 1 meg. resistor to Pin. No. 5 of the 6Q7 valve. Also to this pin connect another 1 meg. resistor and join the other end of this to the black lead of the first I.F. Transformer. Connect a .05 mfd. condenser between this point and chassis. From the black lead also connect a .1 megohm resistor, the other end of which is connected to the A.V.C. lead, Aerial Section of the Coil Box. Red leads of 1st and 2nd I.F. Transformers are connected to B+ 250 v. and to black lead of second I.F. Transformer join a .00025 mfd. Condenser to chassis and outside lug of volume control. Other outside lug of volume control is also connected to Earth

The speaker socket comprises receptacles for two thick pins and two thin pins. The speaker field winding is connected by means of speaker plug across the thick pins and the speaker transformer across the thin pins.

One large pin of the socket is then connected to large pin on 80 socket (see 80 valve). The other large pin is the B+ 250 connection and the second 16 mfd. condenser is connected between this point and chassis (negative end to chassis). Thin pin goes to Pin No. 3 of 6V6 (see 6V6). Other thin pin to B+ 25.. thick pin above.

### ALIGNMENT

Alignment is all-important in superhet adjustment. It is recommended that, when all the wiring has been completed and checked, the I.F. transformers be peaked at the correct frequency before any adjustments are made, as, once the tuning of an I.F. is lost, it is rarely possible to regain it by ear. If it is not practicable to have the I.F.'s peaked after construction, they should not be touched until the front end of the set is working reasonably well.

When a calibrated dial, matched to the coil-kit, is used, the gang should be fully enmeshed and the dial-pointer set at the low frequency end of the dial. The first adjustment consists of carefully screwing the coil-trimmers (or the trimmers on the gang for a straight broadcast set) in or out, for best reception of a station near the high frequency end of the dial. The broadcast band should be attended to first, with the padder slackened off a turn or so. The oscillator, or trimmer, will have an effect on the position on the dial where the station comes in and the padder likewise. Having adjusted the trimmers for best reception at the high-frequency end of the dial, pick up a station at the low-frequency end and adjust the padder for best results without touching the trimmers. A final adjustment may then be made of the trimmers with the selected high-frequency station again tuned-in. With a dial without station markings, simply adjust for maximum signal at both ends of the dial. Work back from oscillator trimmer to aerial.

When the set is working reasonably well, careful adjustment of the I.F. trimmers may be carried out, beginning with the secondary of the second I.F. and working back to the primary of the first I.F. Care must be taken not to seriously de-tune the I.F.'s as this means re-alignment and commencing all over again.

On short-waves a variable padder is not generally employed and the most suitable method is to adjust the trimmer condensers for best reception of any particular band in which the constructor is interested, or on a band which comes near the centre of the stated tuning range of the coil-kit.

Constructors with no previous experience of superhets should get the set properly lined-up by a serviceman if difficulty is met with. If the circuit is faithfully followed, and alignment carefully done, this receiver will put up a first-class performance.

## OCTAL HIKERS TWO—Continued

enamel scraped off and a touch of solder used to secure the wire to the prong.

The Broadcast Coil is the same as that used in the Hikers One: Aerial, 35 turns; Grid, 100 turns; Reaction, 40 turns. Wound on 1¼in. plug-in coil former with 32 gauge enamelled copper wire. All windings must be made in the same direction and must be spaced ⅛in. apart.

A short wave coil for this set may be made as follows:—1¼in. former, 26 gauge enamelled wire. C1, 4 turns; C2, 20 turns; C3, 15 turns. In a short wave coil, half a turn of wire will make a very big difference, so there is plenty of fun in store for those who have the urge to experiment in this direction and make up a few different coils.

A final word of warning to beginners. Don't forget that the position of connections is reversed when you change from the top view to the bottom view. This fact is liable to cause mistakes when connecting up the coil windings to the socket, and the battery cable to the plug. It is a good idea to make a sketch showing both top and bottom views and to have this handy when you are making the connections.

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Recently I bought a "Hiker's Two" Kitset from you. Using 'phones I receive 1YA and 1ZB very clearly and quite loud during the daytime.

2YA and 2YH are loud enough to understand speech. At night, besides those mentioned which have to have volume reduced, I receive 2YA, 2ZB, 3YA, 3ZB, 2ZJ, and have received ZJU Suva and 2NC Australia (Newcastle).

I have been using the set at Hicks Bay, 11½ miles by road from Gisborne.

—L.T., Gisborne.


## PARTS LIST DUAL WAVE SUPER SIX

### "BROADCAST VERSION"

1 Chassis.
1 100 M.A. Power Transformer.
1 3 gang Tuning Condenser.
1 Dial.
2 6K7 Valves.
1 each 6K8, 6Q7, 6V6 and 80 Valves.
1 each "Ensign" Aerial, Oscillator and R.F. Coil.
2 "Ensign" Iron Core I.F. Transformers.
7 Valve Sockets.
2 500,000 ohm. Potentiometers.
2 .0001 mfd. Fixed Condensers.
2 .00025 mfd. Fixed Condensers.
2 .005 mfd. Tubular Condensers.
1 .006 mfd. Tubular Condenser.
3 .05 mfd. Tubular Condensers.
7 .1 mfd. Tubular Condensers.
1 8 mfd. Electrolytic Condenser.
2 16 mfd. Electrolytic Condensers.
1 25 mfd. Electrolytic Condenser.
1 Padder Condenser.
13 Resistors.
3 Knobs.
1 Terminal Panel.
2 coils Hook-up Wire.
1½ yards Power Flex.
SUNDRIES: Grid Clips, Nuts and Bolts, Solder Lugs, Grid Wire, Enamelled wire, Grommet.

**Complete Kit of Parts as above—**

Cat. No. TK2060 .. **£15**

### "DUAL WAVE VERSION"

DELETE:
"Ensign" Aerial, Oscillator and R.F. Coils.
1 Padder Condenser.
1 .05 mfd. Condenser.

ADD:
1 "Ensign" Dual Wave Coil Unit.

Cat. No. TK2060A ..

**£19/5/-**


## U.H.F. CONVERTER—Continued

The converter is coupled into the I.F. amplifier through a low impedance link and this requires that the input transformer in the I.F. amplifier be modified by winding a number of turns around the grid coil and connecting the link to this coil. Another method is to construct a duplicate of T1 and wired into the input of the I.F. amplifier, thus substituting the original I.F. amplifier transformer. If a receiver is used for the I.F. amplifier, the output leads connect to earth and the grid cap of the mixer tube, replacing the regular grid lead.

The aerial used is the usual U.H.F. type—whichever type you prefer.

Experimenting with L2 will help you get a better match to the aerial system you use. The details given for this coil in the body of this article are average values which worked out generally for low-impedance line input.

If the signals received are weak, this can be put down to too much or too little oscillator voltage reaching the mixer. This can be rectified by moving the coil, L3, to or away from L4. The adjustment is not at all critical.

T1 is mounted rigidly inside its can, and the coil leads are brought to a low-loss tube base. The tube base is mounted firmly so that it can be plugged into a low-loss socket. The appropriate transformers for each range may then be plugged into the socket. Earth for the can is wired to a spare pin on the base. The condenser in T1 is a 35 mmfd. type and is adjusted through the usual hole in the top of the can. The adjustment is not critical.

In place of the type 7A4 tube, a type 955 may be used. There is not much to choose between this acorn tube and the 7A4.

When completed, the bottom of the converter is shielded by means of an aluminium plate. Thus the two compartments are completely enclosed. The entire chassis may be made of aluminium, say 1-16in. in thickness, and bolted, as shown. Sketch B2 gives you an idea of how to go about the construction of the chassis.

All resistors are 1 watt types and the condensers 600 volt working types.

The power supply should have good regulation, preferably one with a stabiliser tube.

The results from this converter will please you and its cost is small.


## PARTS LIST U.H.F. CONVERTER

1 Chassis.
1 1232 Valve. 1 7A4 Valve.
2 Sockets for above.
1 .00001 mfd. Variable Condenser.
1 .000015 mfd. Variable Condenser.
1 .000035 mfd. Variable Condenser.
Coils. (See Text).
1 .0001 mfd. Mica Condenser.
3 .0005 mfd. Mica Condensers.
2 .01 mfd. Tubular Condensers.
1 500 ohm Carbon Resistor.
1 10,000 ohm Carbon Resistor.
1 20,000 ohm Carbon Resistor.
1 125,000 ohm Carbon Resistor.
2 Large Pointer Knobs.
2 Terminals.

SUNDRIES: Hook-up Wire, Solder Lugs, Nuts and Bolts, etc.

# The "Bell-tone" Dynamic Amplifier

**Low Cost!**
**Outstanding Performance!**

**STILL MODERN**

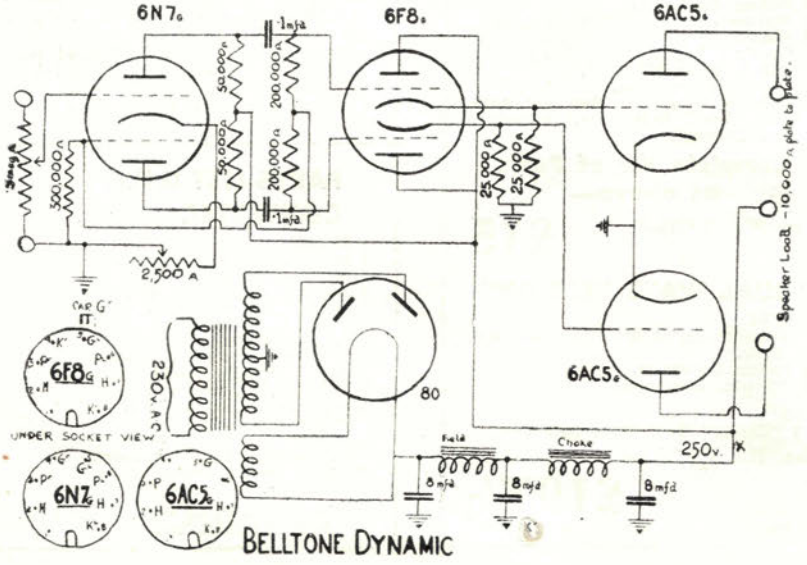
**STILL INEXPENSIVE !**

## A POPULAR PRE-WAR AMPLIFIER

DETAILS.

HERE is a simple amplifier capable of delivering 9.5 watts undistorted output. It is easy to build, has no hum, and is inexpensive. It is dynamically coupled, which accounts for its distortionless reproduction, giving as it does a truly "bell-like" tone. Frequency response is flat from 40 to 9000 cycles! The R.M.A. definition of a high-fidelity receiver is "one which has an audio reproduction range from 50 to 7,500 cycles with a harmonic distortion not to exceed 5 per cent." The range of the average console radio is from 100 to 4,000 cycles. We give you these figures by way of comparison. Another point is that from low volume up to full output the same high quality is obtained—no falling off in bass response at low volume. The 6AC5G tubes are designed to operate with dynamic coupling from the driver cathodes—the 6F8G is an ideal tube for this purpose. The cathodes of this tube automatically supply the correct bias for the 6AC5G's. Dynamic coupling is the only possible method employable in television, where distortionless amplification over a wide frequency range is necessary. The coupling between the 6N7G and 6F8G is also unusual, and phase inversion is obtained without the necessity of having both input leads above earth. It is similar to a method used in "talkie" equipment. It is much simpler for all purposes to have one input lead earthed, besides eliminating hum where long leads are used. We experimented with many methods of obtaining phase inversion and transformers, but the one shown was infinitely superior to all others. It is of the greatest importance to have the grid resistors, 25,000 ohms and 200,000 ohms accurately matched, this condition being fulfilled in our kits. With this amplifier there is no necessity for an abnormally high voltage with a special transformer; 250 volts is ample and the total drain is under 100 mils. By using the standard voltage supply we get long trouble-free service as well as the ability to couple the amplifier on to most existing receivers. If it is intended to do this, the power supply as shown in the circuit diagram will not be necessary, the H.T. lead from the amplifier at the 250 volt point marked X being taken as the filtered high tension of the receiver. When doing this do not forget to connect amplifier chassis to receiver chassis to provide H.T. return circuit. On the experimental job we built we did not match the speaker to the 6AC5G plate load, but of course the correct matching load of 10,000 ohms plate to plate is advisable. It is essential that a good speaker be used, the ideal one being a heavy duty 12in. However, for home use 8 or 10-inch speakers are suitable. The setting of the cathode bias resistor potentiometer of the 6N7G is not very critical, but there is a point where best quality is obtained. For the sake of clarity we have not shown the filament connections in our circuit. We have no hesitation in stating that this is the best amplifier of medium power that we have ever had the pleasure of describing. Its quality is limited only by the quality of input and speaker used. Apart from home use, the amplifier with nearly 10 watts is very suitable for small public address systems and dance hall work.

To be absolutely free from hum, reverse the positions of field coil and choke.




## PARTS LIST.

### "BELL-TONE" Dynamic Amplifier.

1 Chassis.
1 100 m.a. 6.3 v. Power Transformer.
1 100 m.a. Choke.
3 8 mfd. Electrolytic Condensers.
2 .1 mfd Tubular Condensers.
1 2,500 ohm Wire Wound Potentiometer.
1 500,000 ohm Carbon Potentiometer.
2 Oblong Indicator Plates.
2 Pointer Knobs.
1 each 6F8G, 6N7G, 80 Valves.
2 6AC5G Valves.
7 Carbon Resistors.
6 Valve Sockets.
2 Insulated Terminals.
2 yards 3 Core Power Flex.
1 ft. Shielded Grid Wire.

**SUNDRIES:**

Hook-up Wire, Solder Lugs, Nuts and Bolts, Grid Clip, etc.

**COMPLETE KIT OF PARTS as above.**
**Cat. No. TK2061 £7/19/6**

### SUITABLE SPEAKERS

Cat. No. TS921 — "Rola F12", 12in. E.M. Speaker .. .. **£3**

Cat. No. TS925—"Rola G12", 12in. P.M. Speaker .. .. .. **£15**

Cat. No. TS926 — "Rola 12/20", 12in. P.M. Speaker .. **£3/2/7**

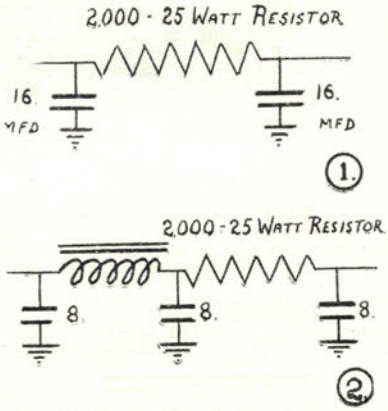
(See article below for substituting E.M. Speakers for P.M. Types).

## CONVERTING CIRCUITS TO USE P.M. SPEAKERS

It is really not a difficult task to convert a Radio Circuit incorporating an Electro Magnetic Speaker to use a Permanent Magnet type.

Manufacturers are now concentrating mainly on the Permanent Magnet type of speaker using the latest "Alnico" Anisotropic Magnet, and the day is not far away when the good old E.M.'s will be just a pleasant memory.

Below we give two Circuits showing the simplicity of the interchangeability of these two types.




The Field winding of the standard E.M. Speaker is replaced by a Heavy Duty Resistor. A 2,000 ohm. 25 watt type is suitable for the majority.

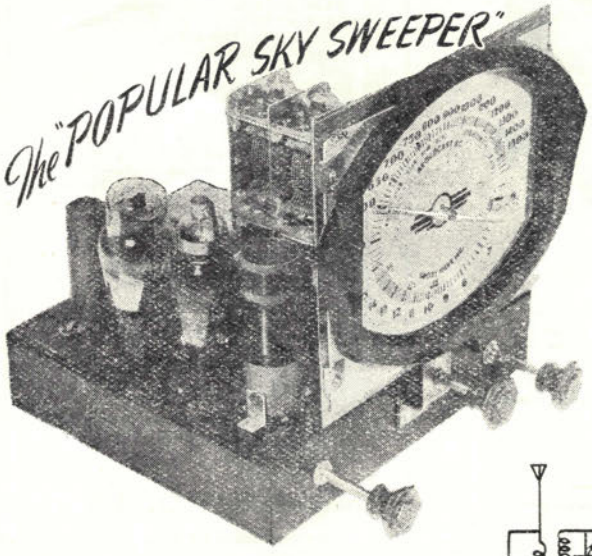
Figure 1 shows the alteration using 2-16 mfd. Electrolytic Condensers for filtering.

In case of hum where this filtering proves insufficient, Circuit 2 should be used. This incorporates a Filter Choke as well as the resistance.

8 mfd. Electrolytics are of a large enough capacity in this set-up.

# 1948 Circuit Review 1949

## TESTED BY TIME!




### THE "POPULAR SKYSWEEPER" PARTS LIST

1 Chassis.
1 each 6D6, 6C6, 42, 80 Valves.
1 60 M.A. 6.3V. Power Transformer.
1 Oxford T.R.F. Aerial Coil.
1 Oxford T.R.F. R.F. Coil.
5 Valve Sockets.
1 2-Gang Condenser.
2 10,000 ohm Wire Wound Potentiometers.
2 8 mfd. Dry Electrolytic Condensers.
1 Dial.
5 .1 mfd. Tubular Condensers.
1 .05 mfd. Tubular Condenser.
1 .01 mfd. Tubular Condenser.
1 .00025 mfd. Tubular Condenser.
9 Resistors.
3 Knobs.
SUNDRIES: Terminal Panel, Flex, Nuts and Bolts, Hook-up Wire, Solder Lugs, etc.

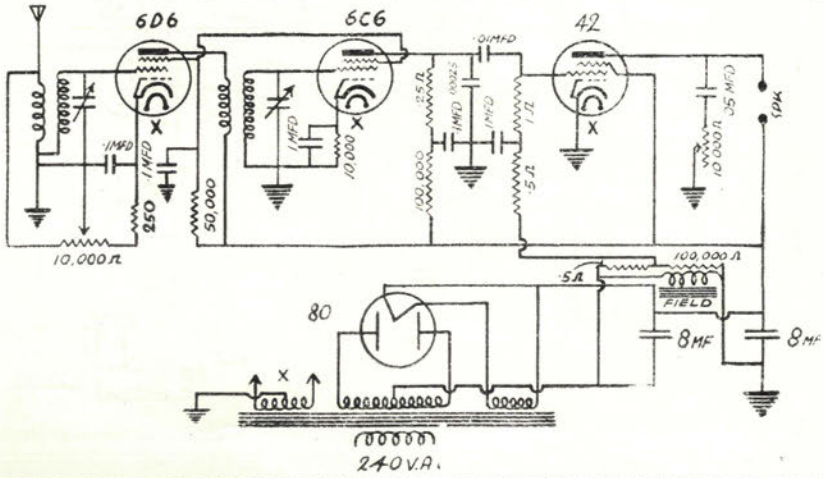
**COMPLETE KIT OF PARTS as above.**

Cat. No. TK2013 (without Speaker) .. .. .. **£8/7/6**

**SUITABLE SPEAKER.**

Cat. No. TS922—"Rola K8" 8in. Speaker .. .. . **£2/16/6**

(Details with each Kit)



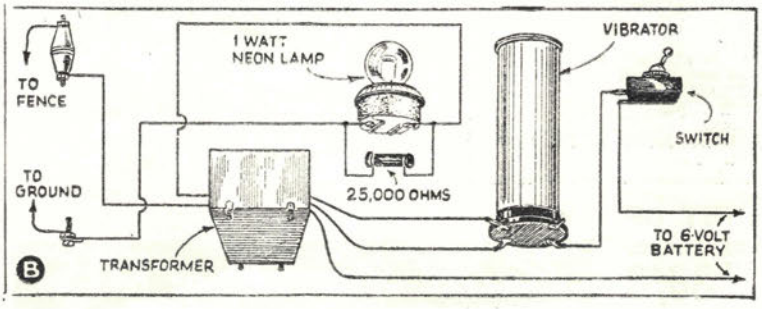

## The "Popular Skysweeper"

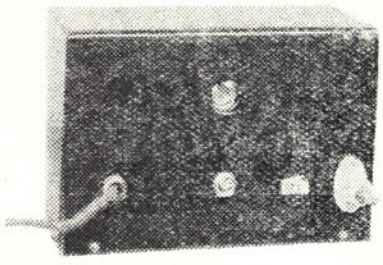
This Receiver incorporates a favourite T.R.F. Circuit which has many desirable features; perhaps the most outstanding being an extremely mellow tone and the ease with which the final lining up may be carried out. Can be assembled by any amateur radio constructor in an evening, and is extremely free from "snags" and complications. Satisfied users of the Popular Skysweeper advise that results compare favourably with factory-built machines.
Main N.Z. and Australian Stations at good speaker strength.

## "OXFORD" ELECTRIC FENCE KIT

A simply designed ELECTRIC FENCE UNIT, easy to construct and worth its weight in gold to the farmer. It has been proved that a single wire charged with electricity is more effective in keeping live stock in selected fields and keeping intruders out, than the old-fashioned barbed wire fence or board fence, and with this thought in mind and in response to numerous requests, we present the "OXFORD FENCE KIT," as previously mentioned a simply designed and constructed unit.

ALL PARTS, DOWN TO THE LAST NUT AND BOLT, ARE SUPPLIED BY "THE LAMPHOUSE."



### PARTS LIST

1 Metal Cabinet.
1 Vibrator and Socket.
1 Vibrator Transformer.
1 S.P.S.T. Toggle Switch.
1 ½-watt Neon Bulb and holder.
1 25,000 ohm Resistor.
2 Battery Clips. 1 Fahnstock Clip.
1 Stand-off Insulator. 10ft. Battery Cable.
SUNDRIES: Hook-up Wire, Solder Lugs, Nuts and Bolts.

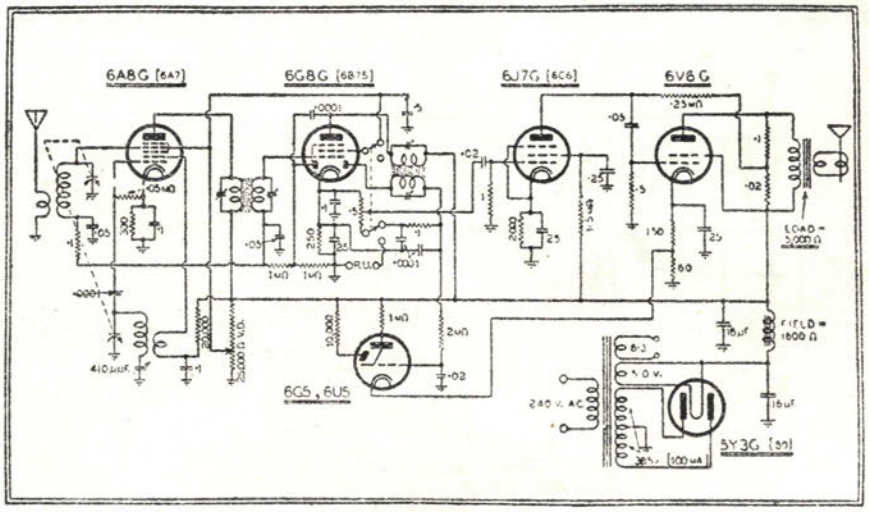
**Complete Kit of Parts as above.**

Cat. No. TK2042 .. .. .. **£3/15/-**

# "The World Wide D/W 5"

IF YOU have constructed an A.C. set of any description, then we feel sure that the "World Wide Five" Dual Waver will present no "snags." Just because it is a dual wave receiver it does not mean that it is difficult to build. On the contrary, this set is quite simple and can be depended upon to give complete satisfaction. It is an up-to-date circuit using octal-based valves and incorporates the use of a magic eye. The Dual-Wave Coil Box is supplied ready wired, so there are no worries in this respect.

The performance of this set compares well with the standard of any commercial receiver in its class.




## PARTS LIST

1 Chassis.
1 each 6A8G, 6G8G, 6J7G, 6V6GT, 5Y3G valves.
1 100 ma. 6.3v. Power Transformer.
1 "Ensign" D/Wave Tuning Unit.
1 2-Gang Condenser.
1 Dial.
12 Resistors, one watt.
1 200 ohm 10 watt Resistor.
1 250 ohm 10 watt Resistor.
1 300 ohm 10 watt Resistor.
2 1000 ohm 10 watt Resistors.
1 500,000 ohm Potentiometer.
1 25,000 ohm Wire Wound Potentiometer.
4 .0001 mfd. Mica Condensers.
1 .02 mfd. Tubular Condenser.
3 .05 mfd. Tubular Condensers.
3 .1 mfd. Tubular Condensers.
1 .25 mfd. Tubular Condenser.
1 .5 mfd. Tubular Condenser.
2 8 mfd. Electrolytic Condensers.
3 25 mfd. 25-volt Electrolytics.
6 Valve Sockets.
3 pairs Goat Valve Shields.
2 Terminals.
3 Knobs.

SUNDRIES: Nuts and Bolts, Solder Lugs, Push Back Wire, Grid Clips, Power Flex, etc., etc.

**Complete KIT OF PARTS as above.**

Cat. No. TK2019 **£15/7/6**

(Without Speaker)

## MAGIC EYE ADDITION

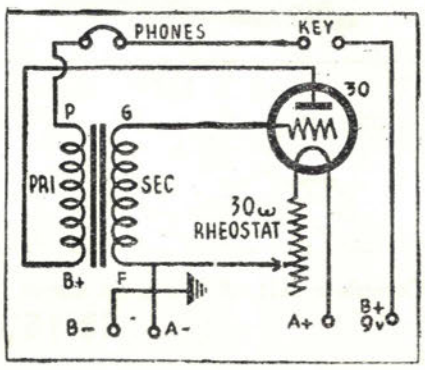
1 6U5/6G5 Valve.
1 Magic Eye Assembly.
3 Resistors.
1 .02 Tubular Condenser.

Cat. No. TK2019A **£16/10/-**

# The "OXFORD" Morse Oscillator

The Morse Code is one of the first things to learn if you have ambitions to become a radio operator or "Ham." The short-wave fan will also get much more fun from his set if he can understand dot dash messages flashing all over the world.

The "Oxford Oscillator" can be constructed within an hour by even a beginner. There's hours of constructive fun and enjoyment in learning the "Code" on this unit.




## PARTS LIST

1 Baseboard.
1 Bakelite Panel.
2 Terminals.
1 30 ohm Rheostat.
1 30 Valve and Socket.
1 Audio Transformer.
2 Fahnstock Clips.
1 9v. Battery.
Hook-up Wire, Knob, Solder Lugs, Screws, etc.

**Complete KIT OF PARTS as above.**

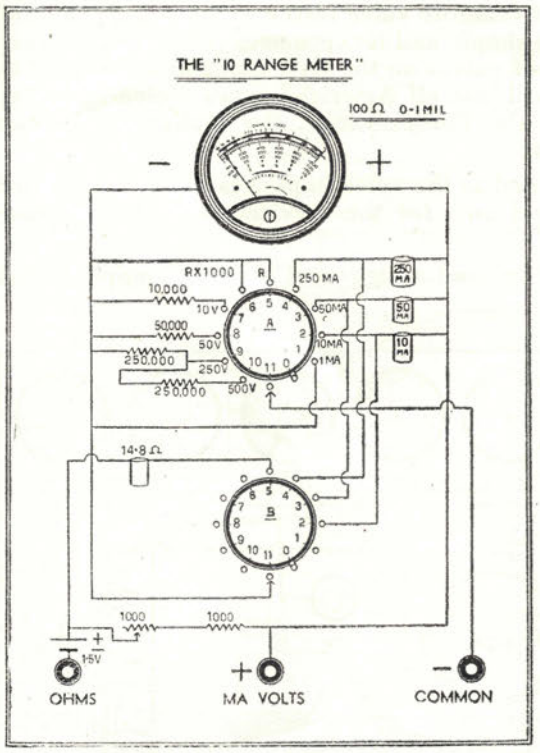
Cat. No. TK2015 **39/6**

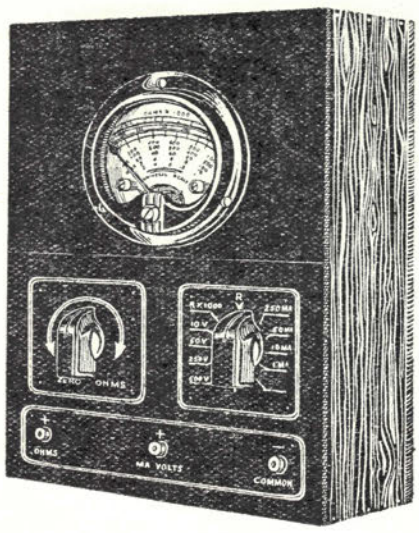
*MORSE KEYS* *For use with above.*

See page 61.

**"Build Your Own" KITS**

# The "10 Range Meter"



Considerable time and thought have been devoted to producing a meter kit set which would be simple and inexpensive to build, yet giving reasonably accurate readings. Here is the result.

The circuit is built around a 3in. 0.1 m.a. 100 ohm internal resistance, Palec Meter fitted with an easily read Universal scale.

The complete unit is housed in a wooden cabinet measuring 9in. x 7in. x 2in.

An excellent piece of Test Equipment for the Radio enthusiast.

## PARTS LIST

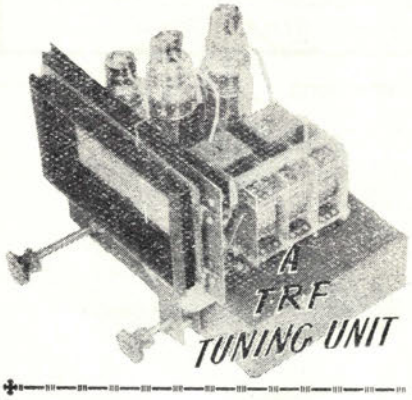
1 Palec 0-1 Ma. Meter (with Universal Scale).
1 12 Contact 2 bank Switch.
2 Pointer Knobs.
1 9 x 7 x ⅛in. Bakelite Panel.
4 Shunts.
5 Resistors.
1 1000 ohm Volume Control.
3 Banana Sockets.
1 Special Wooden Box.
3ft. Single Strand Wire.
1 4½ volt Battery.
SUNDRIES: Solder Lugs, Nuts, and Bolts, etc.

**COMPLETE KIT OF PARTS AS ABOVE.**

Cat. No. TK2041 .. .. .. .. .. .. **£5/7/6**

FULL CONSTRUCTIONAL DETAILS WITH EACH KIT.

# A T.R.F. Tuning Unit



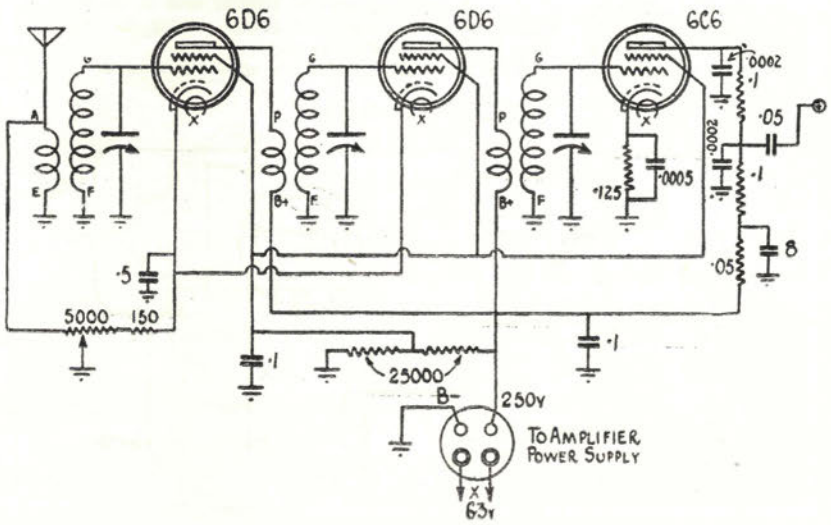

This Tuner has been designed for the music lover who has an amplifier for his favourite recordings. The finest radio reception possible from both local and distant stations can be obtained by using this Tuner in conjunction with a good quality Amplifier.

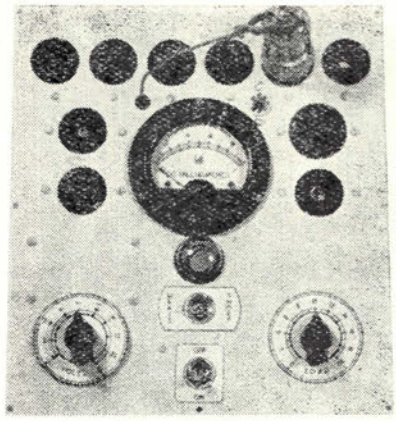
## PARTS LIST

1 Chassis. 1 Dial.
1 Aerial, 2 R.F. Coils (Shielded).
8 Resistors. 1 3-Gang Condenser.
1 5000 ohm Potentiometer.
1 8 mfd. Tubular Electrolytic.
1 .5 mfd. Tubular Condenser.
2 .1 mfd. Tubular Condensers.
1 .05 mfd. Tubular Condenser.
2 .0002 mfd. Mica Condensers.
1 .0005 mfd. Mica Condenser.
4 Valve Sockets.
2 6D6 Valves, 1 6C6 Valve.
3 pairs Goat Shields.
3 Terminals. 2 Knobs.
SUNDRIES: Hook-up Wire, Nuts and Bolts, Grid Clips, 5-wire Cable, Solder Lugs.

**Complete KIT OF PARTS as above.** **£6/15/-**

Cat. No. TK2016 ..





# THE "SIMPLEX UNIVERSAL" VALVE TESTER

In the designing of this versatile valve tester we have kept in mind that the circuit must be simple and inexpensive, yet capable of testing all the many types of valves on the New Zealand market. The **"Simplex Universal"** will test all American types including Octal, Loctal and Miniature, the Philips range, the Mullard and other standard English types.

It's certainly universal and as the name implies is not a complicated unit. It's just the ideal unit for the serviceman, advanced constructor or the "Ham."

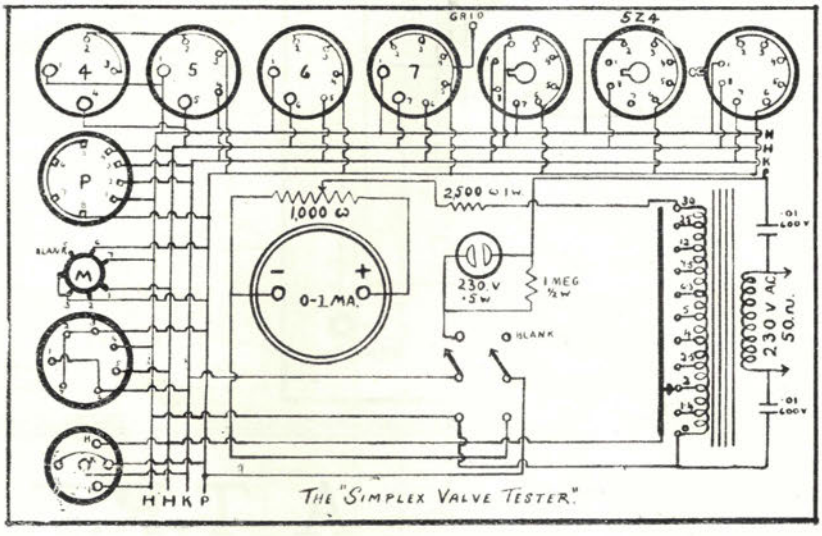
Details covering operation, and a suggested chart are supplied with each kit.

## PARTS LIST

1 Panel
1 each 4, 5, 6, 7, Loctal, Midget Valve Sockets.
2 Octal Valve Sockets.
1 each Philips (P), Squash 7-pin, 5-pin Valve Sockets.
1 0-1 MA Meter.
1 1000 ohm W/W Potentiometer.
1 ½ watt Neon Indicator.
1 Holder for same.
1 Special Transformer.
1 10-position Switch.
2 .01 Condensers.
1 D.P.D.T. Toggle Switch.
1 S.P.S.T. Toggle Switch.
2 Pointer Knobs.
2 Resistors.
1 yard 3-core Flex.
1 Clip.
1 yard Spaghetti Tubing.
SUNDRIES: Including Nuts and Bolts, Hook-up Wire, Connecting Wire, Grommets, Indicator Markings, etc.

**Complete KIT OF PARTS as above.**

Cat. No. TK2032 **£7/7/6**



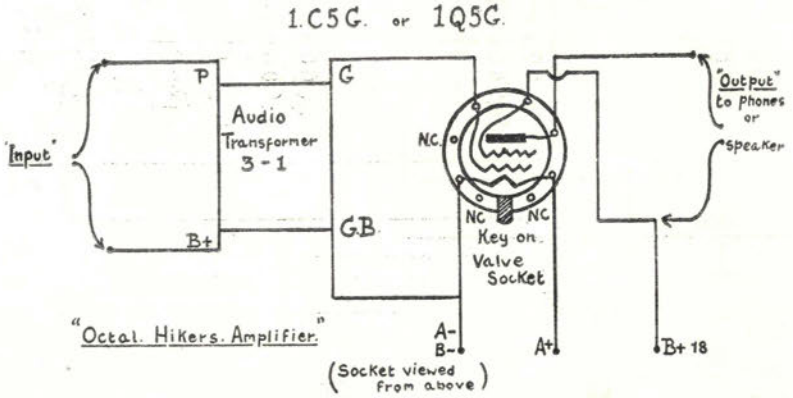
THE "SIMPLEX VALVE TESTER."

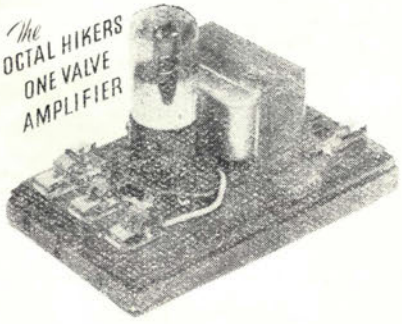
# THE "OCTAL HIKER'S" AMPLIFIER

Below is the circuit of an excellent Single Valve Amplifier using an Octal Type Tube. This amplifier may be used in conjunction with any of the Hiker's Series Sets, or for amplifying a crystal set or other small receivers. The input to the amplifier is simply connected to the headphone terminals of the Hiker's or crystal set, etc. A 3 : 1 audio transformer is shown in the diagram, but a 3½ : 1 or 5 : 1 Transformer would do equally as well.

To obtain satisfactory results it is recommended that 18 volts be used on the plate of the valve, although the amplifier may work on a lower voltage. Using the 22½ volt tapping of a 45 volt B battery would be quite satisfactory.

The ideal Amplifier to hook on to your "Hiker's One" to operate a Speaker.




## PARTS LIST

1 1C5GT or 1Q5GT Valve.
1 Octal Baseboard Socket.
1 Audio Transformer.
7 Fahnstock Clips.
1 Baseboard.
12 Wood Screws.
Hook-up Wire.
Solder Lugs.
1 No. 6 Dry Cell.
2 9-volt C Batteries.

**Complete KIT OF PARTS as above.**

Cat. No. TK2010 .. .. **39/6**

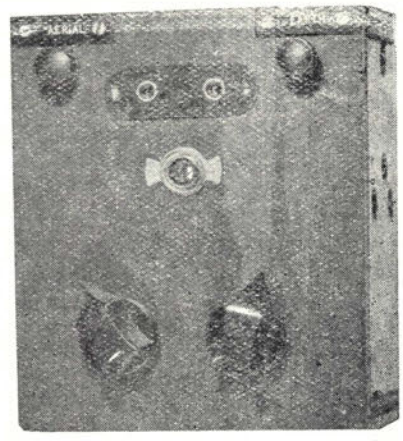
# "THE POPULAR ONE"

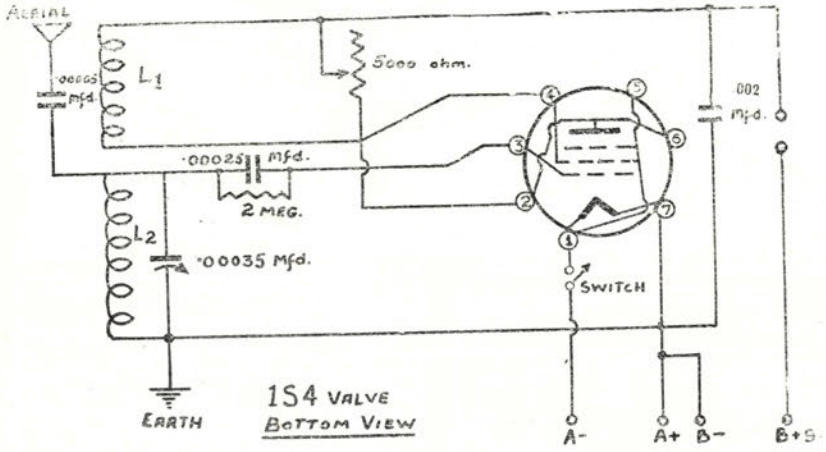
Once again we bring before you THE "POPULAR ONE," the neat and compact little receiver that has proved so popular in recent years. It's the LITTLE chap with the BIG heart!

**A Simple Circuit ——— Brilliant Performance.**

We constructed the trial set in a small wooden cabinet 5½in. x 4⅝in. x 2¼in. deep, and would suggest that you do likewise. A cabinet any smaller than this would tend to cram the components and probably impair the performance.

It's easy to build and gives exceptionally good results. Uses a miniature tube. It's small, and may in fact be carried in the average size coat pocket.






## PARTS LIST

1 Midget valve socket. 1 1S4 valve.
1 .00035 mica spaced condenser.
2 Small pointer knobs.
1 Twin tip jack.
1 2 meg. ½ watt resistor.
1 5000 ohm volume control.
1 Switch.
1 only .00025 mica condenser.
1 .00005 mica condenser.
1 .002 condenser.
1 Midget R.F. coil. 2 Fahnstock clips.
6 Penlite cells. 3 ft. Pushback wire
1 1½ v. unit cell. 8 Nuts and bolts.

**Complete KIT OF PARTS as above.**

**Cat. No. TK2005** (Headphones extra) .. .. .. **45/-**

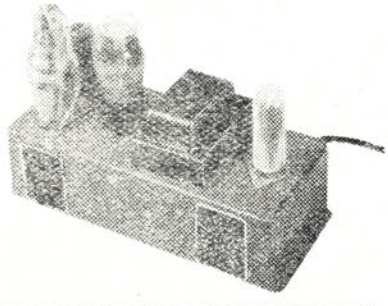
SUITABLE HEADPHONES

**Cat. No. TC245**—"Brown's" .. **26/6** pair

## "Build Your Own" KITS

# "RADIOTRON 4.5 WATT" AMPLIFIER

A simple yet effective circuit of a small 4½ watt Amplifier, ideal for use with a Radio Tuner or an ordinary Gramophone Pick-up. Neat, compact, sensitive; uses all the modern octal based tubes. Gives reproduction that will please the most critical ear.

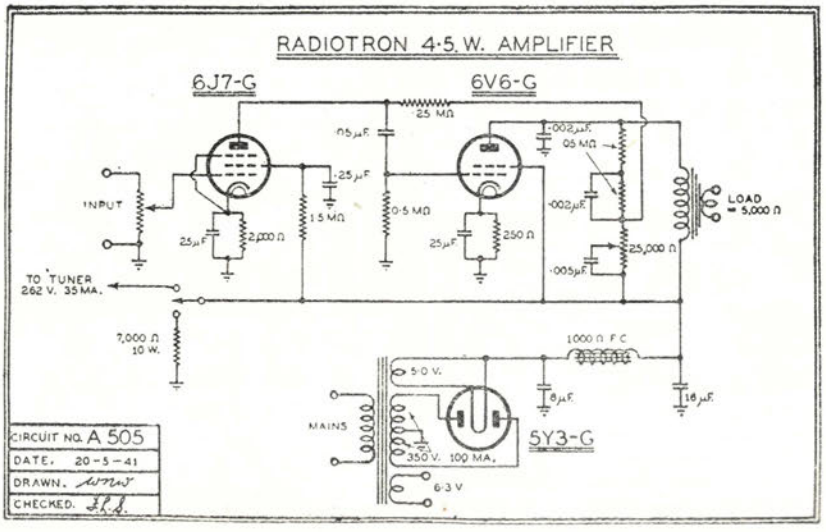


## PARTS LIST

1 Chassis.
1 each 6J7G, 6V6G, 5Y3G Valves.
3 Valve Sockets.
1 Speaker Socket.
1 6.3 volt 80 MA Power Transformer.
1 8 mfd. Electrolytic Condenser.
1 16 mfd. Electrolytic Condenser.
2 25 mfd., 25 volt Electrolytic Condensers
1½ yards Power Flex.
8 1-watt Resistors.
1 7500 ohm, 10 watt Resistor.
1 .005 mfd. Tubular Condenser .
2 .002 mfd. Tubular Condensers.
1 .05 mfd. Tubular Condenser.
1 .25 mfd. Tubular Condenser
1 .5 mfd. Tubular Condenser.
1 Switch.
1 each 25,000, 500,000 ohm Potentiometers.
2 Indicator Plates.
2 Pointer Knobs.
SUNDRIES: Hook-up wire, Grid wire, Nuts and Bolts, Solder Lugs, Clip, Shield, etc.

**Complete KIT OF PARTS as above.**

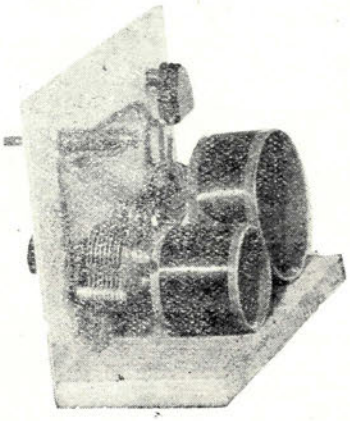
**Cat. No. TK2044** .. .. **£6/5/-**



# CRYSTAL SET REVIEW

**Popular Crystal Sets selected from previous Lamphouse Annuals.**

## The "LYALL"

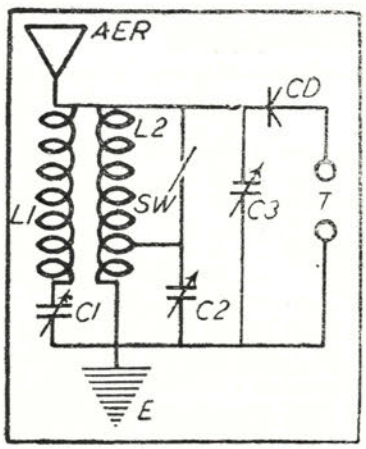


### CONSTRUCTION

The aerial coil L1 consists of 52 turns of gauge 26 enamelled wire close wound on a 3in. former. The secondary coil L2 has 70 turns of the same wire wound on a 2in. former. In winding the coils lay the wire on in the same direction for each coil. With L2 the tap is taken at the 35th turn. To make this tap, drill a hole in the former alongside the 35th turn, twist a 6in. loop in the wire and push this through the hole and down inside the former, and carry on with the remainder of the winding. The pictures show the placements of the various components. Mount the coils parallel to one another and fairly close together.

### WIRING

Start wiring by joining the leads from adjacent ends of L1 and L2 to one contact of the switch which also connects to the fixed plates of the .0005 condenser C3 and one terminal on the crystal detector, and the aerial terminal. The other crystal terminal joins to one phone terminal. The other phone terminal connects to the moving plate of C3 and to the moving plates of both C1 and C2, and the earthed end of the secondary coil L2 and also to the earth terminal. The tap of L2 should be wired to the vacant lug on the switch and to the fixed plate terminal of C2. Complete the wiring by joining the vacant lead of L1 to the fixed plate terminal of C1. Use C3 for tuning and for stations below 2ZB close the switch.



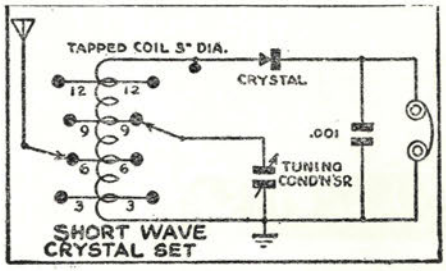

THE "LAMPHOUSE" IS N.Z.'S KITSET HOUSE.

**"LYALL" PARTS LIST**

1 Baseboard and Panel.
1 .0001 mfd Midget Air Spaced Condenser.
1 .0003 mfd Mica Spaced Variable Condenser.
1 .0005 mfd Mica Spaced Variable Condenser.
1 Red Diamond Crystal Detector.
1 S.P.S.T. Toggle Switch.
2 Coil Formers 3in. x 2in. long, 2in. x 2in.
4 Fahnstock Clips.
1oz. 26 gauge Enamelled Wire.
3 Knobs.
SUNDRIES: Hook-up Wire, Nuts and Bolts, Wood Screws, Solder Lugs.

**COMPLETE KIT OF PARTS as above—**
**Cat. No. TK2046 .. .. 35/-**

## "SHORTWAVE" CRYSTAL SET




This circuit uses taps for aerial tuning and both taps and condenser in the crystal circuit.

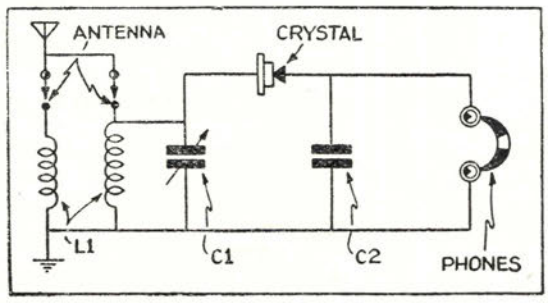
### DETAILS

The tapped coil on this set has a 3-inch diameter, having 15 turns of No. 30 wire double tapped at every third, sixth, ninth and twelfth turn. It also has a tap at the top. The tuning condenser is 140 mmf., but others will work. A crystal must be used.—"Radiocraft."

**"SHORTWAVE" PARTS LIST**

1 Baseboard and Panel.
1 "Wavemaster" Crystal Detector.
1 .00015 mfd Air Spaced Variable Condenser.
1 .001 mfd Tubular Condenser.
1 3in. x 2in. Coil Former and 1oz. 30 gauge Wire.
4 Fahnstock Clips.
2 Bulldog Pee-Wee Clips. 1 Knob.
SUNDRIES: Hook-up Wire, Nuts and Bolts, Screws, Solder Lugs.

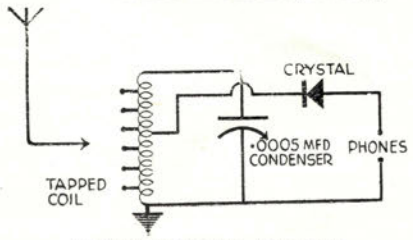
**COMPLETE KIT OF PARTS as above—**
**Cat. No. TK2047 .. .. 23/6**




The Coil, L1, is a standard broadcast band R.F. coil, to be used with a 350 mmf. variable Condenser, C1. Notice that the primary and secondary are to be connected together at the ground end; the antenna may be connected to either the primary or secondary, as shown.

Use the set with a high antenna, at least 60 feet long.

## The "LISTENER"




### CONSTRUCTIONAL DETAILS

Wind the coil first. This consists of 96 turns of 26 gauge D.S.C. or D.C.C. wire on a 1¼in. diameter former. Make a tapping at every 10th turn and an additional tapping at the centre of the coil (the 48th turn). Mount all components on panel and base board.

**"LISTENER" PARTS LIST**

1 Baseboard and Panel.
1 .0005 mfd Single Gang Air Spaced Condenser.
1 Wavemaster Crystal Detector.
1 1¼in. x 3in. Coil Former and 1 oz. 26 gauge Wire.
4 Fahnstock Clips.
1 Knob.
SUNDRIES: Hook-up Wire, Nuts and Bolts, Clip, Screws, Solder Lugs.

**COMPLETE KIT OF PARTS as above—**
**Cat. No. TK2048 .. .. 22/6**

Commence wiring as follows: From the centre tap of the coil to the Crystal Detector. Aerial terminal connects to the clip for attaching to the coil. Each tap on coil is connected to one of the contact terminals on the switch. One end of the coil to the fixed plates of the variable condenser, the other end of the coil to earth. The moving plates of the variable condenser to one phone terminal which is also connected to the earth terminal. The other phone terminal is connected to the remaining side of the crystal detector.

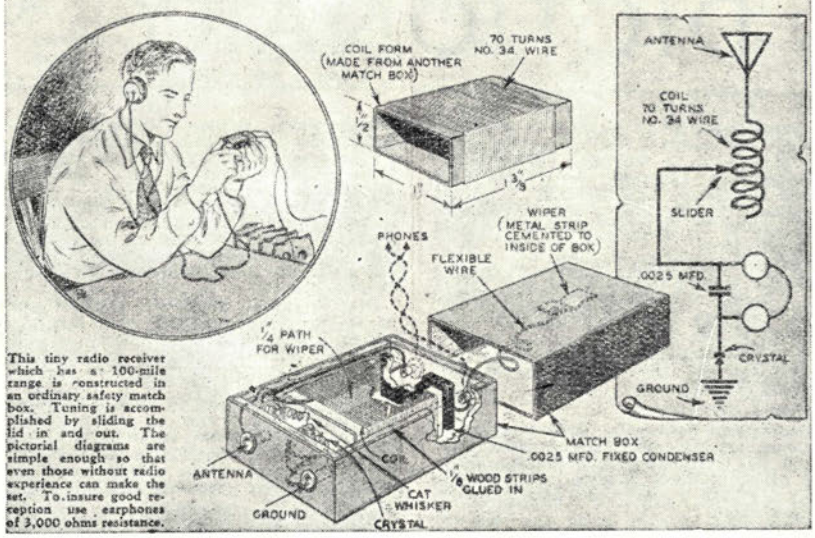
## The "SELECTIVE"

**"SELECTIVE" PARTS LIST**

1 Baseboard and Panel.
1 Wavemaster Crystal Detector.
1 Economy R.F. Ready Wound Coil.
1 .0003 mfd Single Gang Condenser.
1 .0003 mfd Tubular Condenser.
4 Fahnstock Clips.
2 Bulldog Pee-Wee Clips.
1 Knob.
SUNDRIES: Hook-up Wire, Solder Lugs, Nuts and Bolts, Screws, etc.

**COMPLETE KIT OF PARTS as above—**
**Cat. No. TK2049 .. .. 25/-**

# A MATCHBOX RADIO THAT ACTUALLY WORKS

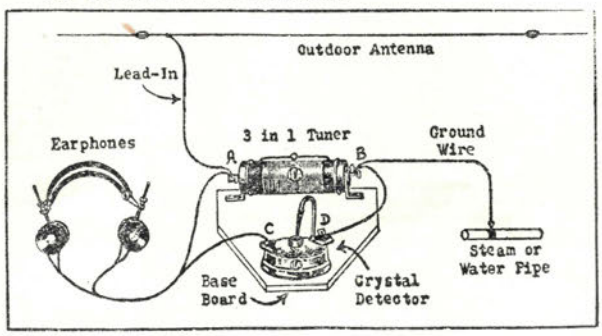



This tiny radio receiver which has a 100-mile range is constructed in an ordinary safety match box. Tuning is accomplished by sliding the lid in and out. The pictorial diagrams are simple enough so that even those without radio experience can make the set. To insure good reception use earphones of 3,000 ohms resistance.

## A SIMPLE CIRCUIT

### INSTRUCTIONS

The I.C.A. Tuner and Detector are screwed down upon a small baseboard to form a convenient mounting. For the aerial a regular broadcast aerial may be used provided it is a long outdoor one. If not, a good outdoor wire, about 100 feet long, high and clear of surrounding objects and well-insulated, should be erected. An insulated lead-in is attached to one end of the aerial (preferably soldered) and run down to the crystal set. Here it is attached to clip A (see diagram). For earth, connect a wire to a convenient water pipe or other earth. Use a good clamp to ensure good contact. Connect earth wire to spring B, connect ear-phones to A on tuner and one side of detector. Connect other side of detector to B, and the crystal set is ready for use. To tune in stations slide ball on tuner back and forth. If no station is heard, adjust catswhisker spring of crystal detector lightly on surface of crystal until a sensitive spot is found. Then slide the ball on the tuner again until a station is tuned in.

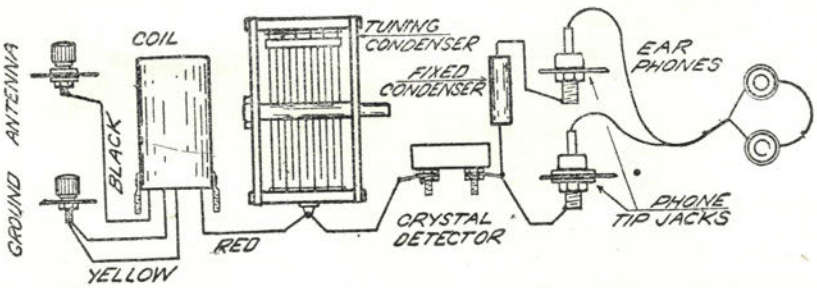



**"SIMPLE" PARTS LIST.**

1 Baseboard.
1 Three-in-one Tuner.
1 Crystal Detector.
SUNDRIES: Wood Screws and Hook-up Wire.

COMPLETE KIT OF PARTS as above.
**Cat. No. TK2051 .. .. 10/-**

## THE "TEA-TIN" CRYSTAL SET




### DETAILS OF CONSTRUCTION.

Here is a picture diagram of an easily built crystal set. It uses a standard aerial coil either air or iron cored such as used in larger sets. The parts can be mounted either on a wood or metal base. A suitable metal chassis could be made out of an old tin container such as a Bell tea tin.

All the parts could be mounted on the lid of a tin. First, cut a disc from a heavy piece of cardboard so it fits snugly inside of the lid. This is to insulate the antenna terminal and one of the phone terminals from the metal can. If these are allowed to touch the metal lid, the receiver will not work.

Drill a hole in the centre of the lid for the tuning condenser shaft. At either side drill holes for the screws which hold the condenser and the dial plate in place. Next, drill holes near the outer rim of the lid for the antenna and ground binding posts and the headphone terminals. Make the holes for the antenna connections and one of the headphone terminals large enough so the terminals won't touch the metal. Put fibre or cardboard washers on each side of the metal to keep the terminals away from the metal when the nuts are tightened. Do not put any washers on the other two terminals because they must be fastened so that they touch the metal.

The tin is used as a common earth connection. If all connections have been properly made you will have a fine receiver which will bring in stations from fifteen to twenty miles away.

**"TEA-TIN" PARTS LIST**

1 Baseboard.
1 .0003 mfd Single Gang Variable Condenser.
1 Economy Aerial Coil.
1 "Wavemaster" Crystal Detector.
1 .001 mfd Fixed Condenser.
2 Fahnstock Clips.
1 Twin-Tip Jack.
SUNDRIES: Hook-up Wire, Screws, Knob, etc.

COMPLETE KIT OF PARTS as above.
**Cat. No. TK2052 .. .. 23/-**

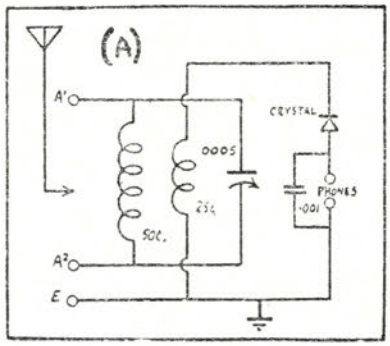
## "17 STATION" CRYSTAL SET

THE following is the design and construction of a good Crystal Set. The Designer obtained 17 different stations on this set but we do not claim that you will be able to do likewise. All the same it is an excellent circuit.

### CONSTRUCTION:

The components are assembled on to a wooden baseboard together with a wooden front panel. The coil comprises 12 turns of 24 gauge enamelled wire on one end of the 3in. former, and then without breaking the wire stop winding, then punch two holes in the former and thread 30-gauge wire through these holes to make the end of the 30 gauge wire secure. Then continue to wind with both wires so that for the next 25 turns the coil is wound with a turn of 30 gauge wire between each turn of 24 gauge.

When 37 turns of the 24 gauge wire, and 25 turns of 30 gauge wire have been wound on stop the winding and without breaking the 24 gauge wire, break the 30 gauge and thread it through two more holes in the former to secure it. Then continue with the 24 gauge wire for another 13 turns and then finish off the coil.




This gives you a coil consisting of 50 turns of 24 gauge wire with 25 turns of finer wire interwound around the middle of the main coil.

The general wiring of the set should not prove difficult to any constructor who has had previous experience with crystal sets.

**"17 STATION" PARTS LIST**

Baseboard and Panel.
1 3in. x 5in. Former, 1oz. 24 gauge and 30 gauge Enamelled Wire.
1 Crystal Detector.
1 .001 mfd. Tubular Condenser.
1 .0005 mfd. Variable Condenser.
5 Fahnstock Clips.
1 Knob.
SUNDRIES: Hook-up Wire, Nuts and Bolts, Screws, Clip, Solder Lugs.

COMPLETE KIT OF PARTS as above.
**Cat. No. TK2053 .. .. 25/11**

# RADIO DICTIONARY

**A-Battery:** The battery used to supply heating current to the filament of a valve.

**A.C. (Alternating Current):** A current of constantly changing direction of flow.

**Acceptor Circuit:** A circuit consisting of inductance and capacity in series constitutes an acceptor circuit, current flow being maximum at the resonance frequency of the combination and less at other frequencies. May be inserted in the aerial circuit to improve selectivity.

**Accumulator:** A device for storing electricity. The most common type consists of a glass or composition container in which is fitted two sets of plates immersed in a dilute sulphuric acid called the electrolyte.

**Acoustics:** In connection with the production and transmission of sound.

**Aerial:** A conductor used for the transmission and reception of wireless waves. The golden rule to follow being to have the aerial as high and as clear of all earthed objects as possible. An overall length of 70ft. may be considered ample for modern receivers.

**Aerial, inverted L:** This type of aerial consists of a flat top portion with a vertical lead in from one end.

**Aerial T:** This is similar to above, but with the lead in brought down from the centre.

**Aerial, Umbrella:** This type consists of a centre support with wires extending radially from it, thus giving an umbrella-like appearance.

**Aerial, Loop:** This consists of one or more turns of wire wound on a frame, which may be rotated. This type is directional and used mainly with portable radios.

**A.F. (Audio Frequency):** In connection with frequencies normally capable of producing an audible sensation.

**Air Condenser:** A variable or adjustable condenser in which air serves as the dielectric.

**Air Core Coil:** A coil in which no magnetism is used to increase the magnetic effect.

**Alignment, Receiver:** Adjustment of R.F. and I.F. Tuned circuits so that all circuits are resonant at the correct frequencies at any point within the tuning range of the receiver.

**Alternating Current:** A.C.

**Alternation:** The portion of the alternating-current cycle between two successive zero values.

**Alternator:** A machine designed for the production of alternating current.

**Ammeter:** An instrument for measuring in amperes the flow of current in a circuit.

**Ampere:** The standard unit used in measuring electric current and is the current which will flow through a resistance of 1 ohm at a pressure of 1 volt.

**Ampere Hour:** This is the quantity of electricity which passes when a current of one ampere flows for one hour. The capacity of an accumulator is generally stated in this unit and is found by multiplying the rate of discharge in amps by the number of hours for which it is delivered.

**Ampere Turn:** A unit of electro-magnetic field strength. A current strength of one ampere passing through a turn of wire.

**Amplification:** Increasing the strength of a voltage or current.

**Amplification Factor:** The ratio of the change of plate voltage to the change of grid voltage to produce a given change in plate current.

**Amplifier:** A unit or units generally including one or more valves capable of producing amplification.

**Amplifier, Audio:** The stages following the detector in a receiver to enable the audio signal to be amplified sufficiently to operate the speaker.

**Amplifier, Radio Frequency:** The stages in a set designed to amplify the incoming R.F. signal before detection.

**Amplifier, Class A:** An amplifier whose plate output waveform is the same as that of the applied grid voltage is termed class A. Tubes used for such work are biased so that the signal voltage is applied to the centre of the straight portion of the tube's characteristic curve, plate current flowing throughout the entire cycle.

**Amplifier, Class B:** An amplifier in which the grid bias is equal to cut-off value so that with no signal applied to the grid the plate current is zero or nearly so. For audio purposes two tubes must be used in push pull, the tubes operating for alternate half-cycles.

**Amplifier, Class C:** An amplifier in which the grid bias is considerably in excess of cut-off value, possibly two to four times. Used mainly in transmitting apparatus, as it allows the tubes to be operated very efficiently.

**Amplitude:** The measure of the maxium deviation reached by voltage, current, or power during one cycle.

**Amplitude Modulation (A.M.):** A type of modulation whereby the amplitude of a carrier wave is varied in accordance with an applied signal. This type of modulation results in the production of side bands.

**Anode:** The plate of a vacuum tube. In a cell the electrode from which the electricity enters the electrolyte.

**Antenna:** See Aerials.

**Antenna Half-Wave:** The fundamental form of antenna. A single wire whose length is equal to half the transmitter wave-length. Sometimes called a Hertz Antenna. Is not connected to ground or earth, and must be cut to the right length.

**Aperiodic:** Means "not tuned." An aperiodic circuit is not resonant at any particular frequency. The aerial circuit of most receivers is an aperiodic circuit inasmuch as it is not tunable to the various frequencies.

**Armature:** The moving portion of a magnetic unit. In radio the moving portion of a loud speaker or the reed of a relay.

**Atmospherics:** Noises heard in the receiver due to electrical discharges in the atmosphere.

**Atom:** Smallest particles of chemical elements, believed to consist of a nucleus with a positive electrical charge round which revolves one or more negative electrons.

**Attenuation:** To produce the power of radio frequency or audio signals.

**Audio Frequency:** A frequency corresponding to a normally audible sound wave. The upper limit ordinarily lies between 10,000 and 20,000 cycles.

**Audio-Frequency Transformer:** A transformer for use with audio-frequency currents.

**Audio Oscillator:** An oscillator capable of producing radio frequency.

**Autodyne:** A heterodyne circuit in which one valve acts as both oscillator and mixed.

**Autodyne Reception:** A system of heterodyne reception through the use of a device which is both an oscillator and a detector.

**Auto-Inductive Coupling:** The coupling between two amplifying or oscillating systems due to an inductance common to both. Connection of a valve cathode to a point in the grid coil is an example, and is the preferred method for producing regeneration or oscillation.

**Automatic Frequency Control:** A device which causes a circuit to be automatically tuned correctly after the manual control has been tuned to approximately the correct frequency.

**Automatic Volume Control:** An automatic reduction of gain for all radio signals. An A.V.C. circuit operates automatically to reduce the gain of R.F. and I.F. amplifiers. Strong signals are affected more than weak signals as the amount of negative bias provided by the circuit increases as the signal strength increases. The result is a levelling down of strong signals or of surges.

**A.W.G.:** American Wire Gauge.

**B-Battery:** A battery supplying voltage to the plate circuit of a tube.

**Baffle:** A partition of wood or non-resonant material placed in front of a speaker to prevent the low frequency sound waves from getting to the back of the speaker and causing a loss of low notes.

**Ballast Tube:** A ballast resistor constructed in the form of a tube.

**Band Spread:** A method of giving a finer control over the tuning of a given frequency band. Generally done by a low capacity variable condenser in parallel with the main tuning condenser.

**Barretter:** A barretter or ballast tube is simply a resistance in the form of a lamp used in certain types of receivers to break down excess voltage.

**Battery:** A combination of chemical cells.

**Battery Charger:** A unit used for re-charging a secondary cell. When operated from A.C. a rectifier is necessary.

**Beam Power Valves:** Tetrodes with special element structure so that the electrons are concentrated in desired paths to the plate. The beam principle results in high power sensitivity without secondary emission.

**Beat Frequency:** When two frequencies are beaten together two additional frequencies are produced. These are equal to the sum of and differences between the two original frequencies and are termed Beat Frequencies, or, sometimes, Beat Notes.

**Beat Frequency Oscillator:** A valve operated in an oscillating condition at a definite frequency. The oscillator frequency is injected into other circuits to produce beat frequencies.

**B-eliminator:** An outfit used to replace B-batteries in D.C. radios.

**Bias:** The difference in voltage or potential between the control-grid of a valve and the cathode. The grid may be at the same potential as the cathode or may be negative or positive with respect to the cathode according to the manufacturer's recommended operating conditions.

**Bleed Resistor:** Any resistance or system of resistances wired across a D.C. supply from negative to positive to bleed a small amount of current from the supply. Usually a wire-wound resistor connected between the positive and negative terminals of a rectified and filtered supply.

**Blocking Condensers:** Used to introduce a high resistance to the flow of D.C. without appreciably affecting the flow of A.F. or R.F. currents according to circuit requirements.

**Breakdown Voltage:** The voltage at which an insulator becomes a conductor.

**Bridge:** An arrangement constituting capacitors, resistors or inductors, used for measuring purposes.

**Broadcast Band:** Generally taken to be those bands of frequencies between 550 and 1500 kilocycles.

**Bucking Coil:** A coil used in a Radio Speaker in which a voltage is produced to oppose the voltage in the principal coil.

**Buffer:** A connection of devices used to prevent interactivity between two additional circuits.

**By-Pass Condenser:** A condenser used to by-pass undesired frequencies from a circuit. The reactance of the condenser must be low at the frequencies to be by-passed.

**C-Battery:** A battery for supplying the biasing voltage to the control grid of a valve.

**Capacity:** Measure of the quantity of electricity a condenser will store up, this being determined by the area of the condenser plates, the distance between them and the nature of the dielectric, that is the type of material separating the plates.

**Capacitive Coupling:** The association of one circuit with another by means of capacity common or mutual to both.

**Capacitive Feedback:** Energy returned from the output to the input of a circuit by means of a condenser.

**Capacitive Reactance:** The opposition to the flow of A.C. or pulsating D.C. caused by a capacitor. The unit for the above is the ohm.

**Capacitor:** A unit designed to achieve the effect of capacitance.

**Carbon:** An element. It is different from other metal elements in that its resistance decreases as the temperature increases.

**Carbon Resistor:** A resistor extensively used in radio circuits composed of carbon particles suitably bound in a cylindrical binder.

**Carrier Wave:** The wave-form of the alternating current introduced into a transmitter radiating system at the specified frequency for the particular transmitter. The energy radiated from the antenna forms the carrier wave and serves as the carrying medium for the signals superimposed at the transmitter during the process of modulation.

**Cathode:** In a radio valve the element which emits electrons.

**Cathode Ray Oscilloscope:** A combination of components including a cathode ray tube used to study the characteristics of alternating voltages and to indicate correct alignment of resonant circuits.

**Cathode Ray Tube:** A vacuum tube in which a stream of electrons is manifested on a fluorescent screen to produce a visible trace.

**Catswhisker:** A fine piece of wire, usually in the form of a spiral coil, used in conjunction with a crystal detector, upon which it rests when in operation.

**Charges, Electrical:** All atoms are made up of charges of electricity. Electrons are negative charges. If an object has a surplus of electrons it is negatively charged. If it lacks electrons it is positively charged.

**Choke Audio:** A coil wound usually on an iron core, designed to impede the passage of audio currents.

**Choke Coil:** An inductor which through the production of a counter e.m.f. disallows the passage of a variable current through its circuit.

**Choke, Filter:** An iron-cored inductance with low resistance and high inductance used in a power supply to offer high impedance at the ripple frequency of rectified current.

**Choke, R.F.:** A coil wound generally on some non-magnetic material and designed to impede radio frequency currents.

**Circuit:** A collection of components so arranged that there exists a complete electrical path.

**Circuit Breaker:** A device designed to break a circuit should the current rise above a predetermined level.

**Circuit, Tuned:** A combination of capacity and inductance. At the resonance frequency of the system current flow is at maximum. If the circuit employs a variable condenser it may be tuned to resonance over a band of frequencies.

**Coaxial Cable:** A two lead cable in which a central lead is supported within the outside conductor in the form of a conducting tube. Usually by insulating beams.

**Co-efficient** of Coupling: A figure of merit representing the efficiency of the coupling between two coils. Complete transfer of energy without loss is termed Unity Coupling. The Co-efficient of Coupling is stated a a decimal part or as a percentage of Unity Coupling.

**Coil:** A number of turns of wire.

**Coil Hum Bucking:** An additional coil usually wound over the field of an electro dynamic speaker to neutralise hum effects.

**Condenser:** Fundamentally two or more metal plates separated by an insulator.

**Condenser, By-pass:** A condenser used to by-pass audio or radio frequency currents, thus tending to keep them out of parts of the circuit where they are not required or cause instability.

**Condenser Electrolytic:** A condenser consisting of two aluminium plates separated by an electrolyte which is usually a borax solution. When voltage is applied to the positive plate and the negative plate (outer can) is grounded, current, at first, flows through the electrolyte. Chemical action quickly produces a hydroxide coating on the positive plate and a film of gas over the hydroxide layer. The two layers or films serve as the dielectric or insulating material between the plates and tne condenser is "formed." It is important to apply the positive voltage to the positive plate whether the electrolytic is the wet type or of the semi-dry tubular type. In the latter, oiled material takes the place of the electrolyte, but the action is the same.

**Condensers, Ganged:** Variable condensers so arranged that the moving plates or vanes of all may be rotated from one control. In modern receivers 2 and 3 gang condensers are most commonly used.

**Condenser, Neutralising:** A small variable condenser used in the R.F. circuit of certain sets to neutralise or balance out the capacity existing between the elements of the valve and thus helping to make operation more stable.

**Condenser, Padding:** A Condenser, either fixed or variable, connected in series with a tuning condenser so that the maximum capacity of the latter may be reduced.

**Condenser, Trimming:** A small variable condenser connected across a larger variable condenser so that fine adjustment of capacity may be available.

**Condenser, Variable:** A condenser the capacity of which may be varied.

**Conductance:** A measure of the ease with which an electric current may flow through a circuit. Unit of conductance is the MHO.

**Conductor:** Any material through which current may pass. Silver, copper and gold are the best conductors—owing to its relative cheapness, copper is used extensively.

**Control Grid:** The element in a valve to which a signal is applied for rectification or amplification.

**Continuous Waves:** Continuous waves are waves in which successive cycles are identical under steady state conditions.

**Converter, Frequency:** A valve used to convert radio frequencies to an intermediate frequency. Also referred to as Mixer, Mixer-Converter, Pentagrid Converter.

**Converter, S.W.:** Generally a single tube receiver the output of which connects to the aerial and earth terminals of broadcast sets. The valve is operated in an oscillating condition and the frequency of the oscillations may be varied by means of a tuning condenser. The short wave signals are tuned in and mixed with the oscillator frequency to produce an intermediate or beat frequency which falls somewhere in the tuning range of the broadcast receiver, generally about 600 kilocycles. The receiver is left tuned to this frequency and the short wave stations are tuned in on the converter. The signal is changed to 600 kilocycles and fed into the aerial and earth terminals of the broadcast set, which amplifies and makes the signal audible in the same manner as if it were receiving an ordinary broadcast station.

**Core:** The laminated construction on which a coil is wound. The insertion of an iron or stalloy core within a coil used as an electro-magnet increases the strength of the magnetic field.

**Coulomb:** Unit of quantity, being equal to one ampere flowing for one second.

**Coupling:** A method of transferring electrical energy from one unit to another.

**Counterpoise:** A system of wires, usually insulated and placed directly under an aerial. The object is to provide a substitute for earth when the soil is dry and rocky, as a high resistance earth connection causes loss of signal strength.

**Crystal:** A quartz plate used to control the frequency of a transmitter. The frequency is determined by the size and shape of the plate. Crystals of Rochelle salt are used for microphones and pick-ups. The action of the crystal is such that minute pressures on the crystal element result in the generation of proportionate audio voltages.

**Crystal Detector:** A crystal used as a rectifier of R.F. Signals.

**Crystal Microphone:** The microphones using Rochelle salt crystals for changing mechanical motion to electrical energy.

**Crystal Pick-up:** A radiogram pick-up using a Rochelle salt crystal to generate an e.m.f. which varies in unison with the indentation of the record.

**Current:** A flow of electrons. The unit of electrical current being the ampere.

**Current, Eddy:** Current set up in nearby conductors by a magnetic field.

**C.W. (Continuous Wave):** A wave in which the amplitude of successive oscillations remains constant.

**Cycle:** One complete set of changes after which the initial condition is restored; that is from zero to maximum positive, to zero, to maximum negative, back to zero.

**Damping:** The gradual decay or reduction in amplitude of oscillation due to resistance.

**D.C.C.:** Double cotton covered.

**Decibel:** Measure of sound beginning at the threshold of hearing, a change in level of 1 decibel being barely perceptible. This unit is used extensively in sound work as the ear does not respond to sound energies of different values in a linear manner. The use of the decibel enables the power output of different amplifiers to be expressed in a unit which bears relation to their effect on the ear.

**Decoupling:** Method by which "motor-boating" and instability is prevented in a receiver by means of decoupling resistors and by-pass condenser. In resistance-coupled circuits of more than two stages it is generally necessary to decouple one of the stages, a resistor about one-tenth of the plate resistor being connected in series with it and a by-pass condenser connected from the junction of the resistors to earth.

**Degeneration:** Loss of signal strength caused by feeding-back out-of-phase energy to a circuit.

**Demodulation:** The operation of extracting the audio signal from the modulated carrier.

**Detection:** The process of changing the received radio frequency oscillations into varying unidirectional current. The act of rectifying.

**Detection, Linear:** A detector is linear when its A.F. output is proportionate to the R.F. input.

**Detector:** Device for converting high frequency currents into currents capable of affecting telephones or similar instruments.

**Diaphragm:** Section of a reproducer which makes audible the electrical impulses fed to it. The cone of a speaker.

**Dielectric:** The insulating material between the conducting plate of a condenser.

**Dielectric Constant** is the specific capacity of a given material. The dielectric constant of air is taken as 1. The ratio of the capacity of a certain sized condenser having a given material as a dielectric to the capacity of the same condenser with air as the dielectric, will give the dielectric constant of that material.

**D.C. Direct Current:** Current which flows in one direction only.

**Diode:** A two element valve.

**Discriminator:** A circuit in which the output varies in keeping with the deviation of a received signal from an original resting frequency.

**Distortion:** A change in wave form occurring in a transducer or transmission medium when the output wave form is not a faithful reproduction of the input wave form.

**D.S.C.** Double Silk Covered.

**Doublet Antenna:** An aerial system composed of two units, the physical length of each having distinct relationship to its resonant frequency.

**D.X.:** Abbreviation meaning "distance."

**E:** Symbol of voltage.

**Earth:** In a Marconi aerial system (such as the L type) the earth acts as one plate of a condenser of which the aerial is the other plate. The ground circuit of a receiver may be connected to earth, but earth and ground are not synonomous.

**Ebonite:** An insulating material used for panels, etc.

**Edison Cell:** A secondary chemical cell sometimes called a nickel-iron-alkaline cell.

**Edison Effect:** An effect observed by Edison. When a filament is heated and another electrode placed in the same bulb, current would flow when a positive potential is applied to the electrode.

**Electric Eye:** A style of electronic tube which is impelled by light impulses.

**Electrodes:** An element of an electrical unit such as an element in a valve or one of the elements of a chemical cell.

**Electrolyte:** A liquid which is subjected to decomposition by an electric current.

**Electro-Magnet:** A magnet formed by the flow of an electric current through a conductor. The conductor is wound in the shape of a coil to intensify the magnetic force.

**Electro-Magnetic Induction:** Transfer of energy from one inductance to another by virtue of the action of an electro-magnetic field around the primary inductance. If the magnetic field is in a state of movement an E.M.F. is induced in the secondary inductance.

**Electromotive Force:** Voltage.

**Electron:** One of the fundamental constituents of matter. A minute particle of negative electricity.

**Electron Emission:** The liberation of electrons from an electrode into the surrounding space. In a vacuum tube it is the rate at which the electrons are emitted from a cathode.

**Electroscope:** Device used for detecting static electricity.

**Electron Tube:** A tube making use of an electron stream in its operation.

**Electro Statics:** Science which deals with the phenomena occasioned by electricity at rest.

**Emission Characteristic:** A graph plotted between a factor controlling the emission (such as the temperature, voltage, or current of the cathode) as abscissas, and the emission from the cathode as ordinates.

**E.M.F.** Electromotive Force.

**Ether:** The hypothetical medium suggested to occupy all space by means of which light, heat and radio waves are transmitted.

**F:** Symbol for frequency, generally given in cycles per second.

**Facsimile Transmission:** The electrical transmission of a copy or reproduction of a picture, drawing or document. (This is also called picture transmission.)

**Fader:** Consists essentially of a centre tapped volume control so that it is possible to change from microphone or radio to pick-up without a sudden break. Rotating the control gradually fades one unit out and brings up the strength of the other.

**Farad:** Practical unit of electrical capacity. A condenser is said to have a capacity of one farad if a charge of one coulomb causes a potential difference of one volt.

**Feedback:** The feeding back of energy from a point in a circuit to a preceding point.

**Fidelity:** The degree to which a system, or a portion of a system, accurately reproduces at its output the signal which is impressed upon it.

**Field:** Name given to lines of force built up round a conductor during the passage of current. Also name given to coil which energises a dynamic speaker.

**Field Coil:** In radio a coil normally used in an electro-dynamic speaker which serves the purpose of producing an intense magnetic field.

**Field Strength:** The field strength of a transmitter at any given point is expressed in millivolts per metre. Should the field strength be 3 millivolts per metre an aerial four metres high would theoretically have twelve millivolts induced in it.

**Filament:** Wire in a vacuum tube which when heated gives off electrons.

**Filament Winding:** A transformer winding designed to furnish common voltage.

**Filter:** Device used in a power supply or to exclude unwanted signals from a circuit.

**Fluorescent Screen:** A screen coated with a fluorescent material which reproduces light impulses when actuated by an electron stream.

**Flux Density:** The number of lines of force per square centimetre around a magnet or electro magnet.

**Frequency:** The number of cycles per second of an alternating current.

**Frequencies, Audio:** Those frequencies audible to the human ear ranging approximately from 15 cycles to 20,000 cycles per second.

**Frequencies, Radio:** Frequencies ranging from about 20,000 cycles per second to many millions of cycles per second.

**Frequency, Intermediate:** Frequency to which the incoming signal is converted in a superhetrodyne receiver.

**Full-wave Rectifier:** A double element rectifier arranged so that current is allowed to pass in the same direction to the load circuit during each half cycle of the alternating-current supply one element functioning during one-half cycle and the other during the next half cycle.

**Galena:** A type of crystal consisting of lead sulphide.

**Galvanometer:** Instrument for detecting and measuring minute electrical currents.

**Gaseous Tube:** An electronic valve using a gas to produce some specific operational function.

**Generator:** A device which converts mechanical energy to electrical energy.

**Grid:** Open wire mesh placed between the plate and filament of a valve.

**Grid Bias:** The amount of voltage difference between the control grid and the cathode of a valve.

**Grid, Control:** Grid to which input signal is applied. A small amount of grid voltage being able to control a relatively large amount of plate current.

**Grid Leak:** A resistance connected between control grid and cathode or a point in the cathode circuit in order that the grid of the tube may be set at the proper voltage relationship with respect to the cathode. The tube may operate under zero bias, positive bias, or negative bias for the grid according to the maker's recommendations.

**Grid, Screen:** A mesh placed between control grid and plate of a valve to shield the control grid from the plate and so reduce the self capacity between these two elements.

**Ground:** That point in a circuit against which all operating voltages are measured—the common reference point. Ground may be at zero voltage or at a positive potential, but in all cases may be connected to earth without upsetting operating voltages.

**Ground Wave:** The section of a transmitted wave which follows the surface of the earth.

**H:** Symbol of magnetic flux density.

**Half-wave Rectifier:** A rectifier which changes alternating current into pulsating current utilising only one-half of each cycle.

**Harmonic:** Frequency which is a multpile of the fundamental.

**Harmonic Distortion:** The generation of false frequencies, generally integral multiples of the fundamental frequencies in an electronic device.

**Heater:** An electrical heating element for supplying heat to an indirectly heated cathode.

**Heaviside Layer:** A layer of electrified atmosphere above the earth's surface which is considered to have a reflecting effect on radio waves.

**Henry:** Unit of inductance. A circuit has an inductance of one henry when a rate of charge of 1 amp. per second produces a back electromotive force of 1 volt.

**Hetrodyne:** To combine forces or frequencies.

**Hetrodyne Reception:** The production of beats by reaction between oscillations received and those locally generated for the purpose of reception is called hetrodyne reception.

**High Fidelity:** The ability of a circuit to pass a band of audio frequencies from 20 to 15 thousand cycles per second without amplitude discrimination.

**Hot-wire Ammeter, Expansion Type:** An ammeter dependent for its indications on a change in dimensions of an element which is heated by the current to be measured.

**Hook-Up:** A circuit diagram.

**Hydrometer:** Instrument used to measure the specific gravity of wet batteries.

**Hysteresis:** The lagging of an effect behind cause producing it. In transformers the magnetism produced in the core lags behind the force which produces it.

**I:** Symbol used to denote the current flow in amperes.

**I.F.:** Intermediate frequencies.

**Impedance:** The combined effect of resistance and reactance. The total opposition offered by a circuit to alternating current.

**Indirectly Heated Cathode:** A cathode of a thermionic tube, in which heat is supplied from a source other than the cathode itself.

**Induced Voltage:** The voltage induced ("led in") in a coil by the action of a varying magnetic field.

**Inductance:** When an alternating current is passed through a coil a magnetic flux is set up, the lines of force cutting the turns of coil induces a voltage in the opposite direction thus retarding the flow of current.

**Induction:** The property by which one circuit may induce energy into another circuit without electrical contact.

**Inductive Coupling:** Transfer of energy from one coil to another without any direct connection. As a result energy is transferred from one circuit to another without electrical connection. (See Electro-magnetic Induction.)

**Inductive Reactance:** The opposed effect set up to a change of current flow in a circuit due to the inductive quality of the circuit.

**Input:** The grid of a tube. That portion of a circuit to which the signal voltage is applied.

**Insulator:** Material of high resistance properties. The opposite to conductor.

**Interelectrode Capacitance:** The direct capacitance between two electrodes.

**Intermediate Frequency:** The radio frequency to which an incoming carrier wave is converted in a super-heterodyne circuit. The intermediate frequency is the resonance frequency of the I.F. Transformers, and conversion of broadcast frequencies to the I.F. is obtained by mixing the B.C. frequency with another frequency produced by an oscillator valve in the receiver.

**Intermediate Frequency Amplifier:** The portion of a super-heterodyne receiver which amplifies the intermediate frequency.

**I.F. Transformer:** A transformer tuned to pass a particular frequency. It is used for coupling purposes in the intermediate frequency amplifier.

**Intermodulation:** The production, in a non-linear circuit element, of frequencies corresponding to the sums and differences of the fundamentals and harmonics of two or more frequencies which are transmitted to that element.

**Interrupted Continuous Waves:** Interrupted continuous waves are waves obtained by interruption at audio frequency in a substantially periodic manner of otherwise continuous waves.

**Inverse Feed-back:** The feeding back of out-of-phase energy to a circuit to reduce distortion. The action is degenerative, and a loss of gain results. High-gain tubes should be used.

**Ion:** An atom with an excess or a deficiency of electrons.

**Ionisation:** The liberation of charged particles of gas known as Ions, generally the result of collision between high-speed electrons and gas atoms.

**I.R. Drop:** The Potential drop or voltage across the terminals of a resistor.

**Jack:** Appliance generally used to connect phones or a speaker into a circuit.

**J-Operator:** An operational factor used to indicate that the value which it precedes is the out-of-phase component of a complex expression.

**Joule:** Unit of energy. The amount of energy expended in a circuit when 1 amp flows at a pressure of 1 volt for 1 second.

**Keeper:** Iron bar placed across Poles of a magnet which helps it to retain its magnetism.

**Kilocycle:** One thousand cycles (shown usually as k.c.).

**Kilowatt:** One thousand watts of electrical power.

**L:** Symbol for inductance.

**Laminations:** Thin metal strips used for the cores of chokes and transformers.

**Lead-In:** That portion of an antenna system which completes the electrical connection between the elevated outdoor portion and a receiver.

**Leakage Loss:** Loss in condensers, etc., due to the fact that no insulating medium is perfect.

**Lightning Arrestor:** A device with a very small spark-gap, one side of which is connected to the aerial and the other to earth. If the aerial is struck by lightning, discharge occurs across the gap to earth, thus saving damage to the receiver.

**Limiter:** A hook-up in which amplitude variations are removed from a modulated wave.

**Linear Detection:** That form of detection in which the audio output voltage under consideration is substantially proportional to the modulation envelope throughout the useful range of the detecting device.

**Line Filter:** The combination of Condensers and/or Coils placed in the electric mains to prevent power-line noises reaching the set through the mains.

**Line Voltage:** The voltage shown at the terminals of an electrical service line.

**Lines of Force:** The imaginary lines in space along which electrical or magnetic action is said to take place.

**Litzendraht Wire:** Commonly called "Litz" wire, consists of several fine strands of wire insulated from each other, plaited together, and generally covered with silk. This wire is used where losses must be kept at a minimum. The surface area is increased over a single wire, thus reducing the "skin effect" (which see).

**Load:** Generally refers to the resistance or impedance placed in the plate circuit of a valve.

**Loud Speaker, Moving Coil:** A light coil placed in a strong magnetic field. As the audio current flows through this coil the interaction causes the cone attached to the coil to vibrate and produce sound waves corresponding to the audio current variations.

**Ma:** Milliampere.

**Magnetic Field:** The space surrounding a magnet in which magnetic forces are experienced. The magnetic field is assumed to consist of lines of force.

**Magnetic Microphone:** A microphone whose electrical output results from the motion of a coil or conductor in a magnetic field.

**Magnetic Pick-Up:** A type of phonograph pick-up in which the record indentations impel a moving iron vane pivoted between the poles of a magnet. The resulting change in magnetic reluctance causes the production of an e.m.f. in a surrounding coil.

**Meg:** A prefix meaning one million.

**Magnetic Speaker:** A type of radio speaker in which the actuating mechanism is a lever pivoted between the pole of a permanent magnet.

**Megacycle:** When used as a unit of frequency, is a million cycles per second.

**Mercury-Vapour Rectifier:** A mercury vapour rectifier is a two-electrode, vacuum-tube rectifier which contains a small amount of mercury. During goperation, the mercury is vapourised. A characteristic of mercury-vapour rectifiers is the low-voltage drop in the tube.

**Metre:** The unit length in the C.G.S. system of units. One metre equals 39.37 inches.

**Meter:** An instrument used for measuring. Generally refers to an instrument capable of measuring one or all of the following: volts, ohms or milliamps.

**MHO:** Unit of conductance, found by dividing unity by the resistance in ohms; e.g., a circuit with a resistance of 5 ohms will have a conductance of one-fifth or .2 mhos.

**Mica:** A mineral consisting of thin flexible scales used as an insulating material.

**Mica Condenser:** A condenser, generally fixed, using mica as a dielectric.

**Micro:** One millionth.

**Micro Ampere:** One millionth of an ampere.

**Micro Farad:** One millionth of a farad.

**Micro Henry:** One millionth of a henry.

**Microhm:** One millionth of an ohm.

**Micron:** One thousandth part of a millimetre.

**Microphone:** A device for transforming audible sound energy into electrical impulses.

**Microphonic:** An audible sound coming from an amplifier usually due to the independent vibration of various elements in one or more valves or components in the amplifier.

**Microphone Carbon:** A diaphragm placed in contact with carbon granules. Sound waves cause the pressure of the diaphragm on the granules to vary—the resistance of the circuit varies accordingly.

**Microphone Crystal:** A pair of Rochelle salts crystals are used in this type of microphone. Variations of sound pressure cause the crystals to vibrate giving rise to piezo electric voltages.

**Microphone Velocity:** A Microphone which has a metal ribbon suspended between the poles of a magnet.

**Milli:** A prefix denoting one thousandth.

**Milliameter:** Instrument used for reading current in milliamps. A milliameter should always be connected in series with, not across the points to be measured.

**Milliamp:** One thousandth part of an ampere.

**Mixer:** The tube in a superheterodyne receiver which "mixes" the received signal with that of the local oscillator producing the intermediate frequency. Also refers to controls used to mix or blend several sources of sound, such as combining music and sound from two different microphones.

**Modulated Amplifier:** The stage in a transmitter in which the audio signal is impressed on the carrier wave.

**Modulated Wave:** A modulated wave is a wave of which either the amplitude frequency or phase is varied in accordance with a signal.

**Modulation:** The process by which the audio frequency wave is combined with the radio frequency carrier wave.

**Modulator:** A device which performs the process of modulation.

**Molecule:** The minutest particle of a substance which retains all of the characteristics and properties of that substance.

**Motor:** A unit or machine which converts electrical energy to mechanical energy.

**Motor-boating:** Low frequency oscillation of an audio amplifier.

**Mu:** Greek letter used to denote the amplification factor of a vacuum tube.

**Mutual Conductance** of a valve is the ratio of a change in plate current to the change in grid voltage required to produce the change in plate current. It is a measure of a valve's ability to amplify and is sometimes called Transconductance.

**Negative:** A point in a circuit having an excess of electrons.

**Negative Bias:** A negative voltage applied to the control element of a vacuum tube with respect to the cathode.

**Negative Feedback:** Inverse Feedback.

**Neon Lamp:** A glass bulb containing two metal electrodes and filled with Neon gas at a low pressure. When a sufficiently high potential difference is applied across the electrodes, the negative electrode glows, owing to a discharge taking place through the gas.

**Ohm:** The unit of electric resistance. A circuit has a resistance of one ohm when a current of one amp flows at a pressure of one volt.

**Ohmmeter:** A combination of electrical components, including a meter calibrated to read in ohms the value of a resistor placed between two terminals.

**Oscillator:** A non-rotating device for producing alternating current, the output frequency of which is determined by the characteristics of the device.

**Oscillatory Circuit:** A circuit containing inductance and capacitance, such that a voltage impulse will produce a current which periodically reverses.

**Oscillograph:** A device which produces a permanent visual trace of a wave shape.

**Oscilloscope:** See Cathode Ray oscilloscope.

**Output Meter:** A meter indicating the output of an electrical device. It may be calibrated in watts, amperes, volts or decibels.

**Output Transformer:** A transformer used to couple the final amplifier stage in a system to the speaker.

**Output Tube:** The final valve in an amplifier system generally converting a large input signal voltage to a large power output.

**P:** Symbol used to denote electrical power in watts. Used alternately with W.

**Parallel:** Where two or more resistors, etc., are connected across the same points in a circuit they are said to be in parallel.

**Peak:** The maximum value during a current or voltage cycle, this being 1.414 of the effective value of alternating current.

**Pentode:** A type of thermionic tube containing a plate, a cathode, and three additional electrodes. (Ordinarily the three additional electrodes are of the nature of grids.)

**Percentage Modulation:** The ratio of half the difference between the maximum and minimum amplitudes of a modulated wave to the average amplitude, expressed in per cent.

**Permanent Magnetic Speaker:** A moving coil or dynamic radio speaker in which the steady magnetic field is produced by a permanent magnet.

**Permeability** refers to the property of multiplying and intensifying the lines of force of a magnetic field. A stalloy core inserted within a coil has this effect.

**Permeability Tuning:** A type of electrical circuit tuning in which the inductance of a coil is varied by the insertion of a magnetic core.

**Permeance:** The ease with which lines of force may pass through a given substance. The opposite to reluctance.

**Phase Inversion:** Literally change of phase by an angle of 180 deg. Usually refers to the method employed in resistance-capacity coupled amplifiers to supply the grids of push-pull tubes with alternate half-cycles of the signal voltage. The circuit arrangement is such that one push-pull grid is positive with respect to a common cathode connection when the other grid is negative. The same result may be achieved by connecting each grid to a centre-tapped coil, such as the secondary of a push-pull transformer. The ends of the coil are of opposite polarity with respect to the centre-tap.

**Phon:** Unit of loudness.

**Phono Pick-up:** A contrivance which converts the indentation on a gramophone record into electrical or mechanical audio impulses.

**Photo-electric Cell:** A device for converting variations in light to electrical impulses.

**Phototube:** A vacuum tube in which electron emission is produced by the illumination of an electrode. (This has also been called photo-electric tube.)

**Piezo Electricity:** Property possessed by Rochelle salts crystals and certain other substances whereby voltages are formed when mechanical pressure is applied.

**Plate:** A common name for the principal anode in a vacuum tube.

**Plate Circuit:** The circuit in which plate energy is dissipated, including the external load, power supply device and internal element connections.

**Pole:** An electrode one end of a magnet or in a cell.

**Potential Difference:** The force which causes electricity to flow. The difference in voltage between two points in a circuit.

**Potentiometer:** Refers to resistance shunted across a circuit equipped with a sliding arm to enable voltage to be tapped off at any point.

**Power Amplification** (of an amplifier): The ratio of the alternating-current power produced in the output circuit to the alternating-current power supplied to the input circuit.

**Power Factor:** The ratio of apparent power to true power in a reactive circuit.

**Power Pack:** Device to enable all the receiver power requirements to be supplied from the mains. Generally includes a rectifier transformer and a combination of filter chokes and condensers.

**Power Transformer:** The transformer in an A.C. operated device supplying operating voltages to the various sections of the circuit. The transformer obtains its operating power from the A.C. line.

**Primary:** The circuit to which electrical energy is led; as in a transformer.

**Proton:** One of the units from which all matter is built up. A positive particle of electricity. Nucleus round which electrons revolve.

**Pulsating Current:** A periodic current; that is, current passing through successive cycles, the algebraic average value of which is not zero. A pulsating current is equivalent to the sum of an alternating and a direct current.

**Push-Pull Amplification:** The use of two valves for one stage of amplification which may be either voltage amplification or power amplification. Each valve works on one half of the incoming cycle. The practical result is higher power output with lower distortion than when a single valve is used. The plates are connected to a centre-tapped transformer winding.

**Q:** The symbol used to denote electrical quantity in coulombs.

**Quartz Crystal:** A crystal exhibiting Piezo electric effects.

**R.:** The symbol for resistance.

**Radiation:** In radio, the process of sending out a wave by exciting the ether through which transmission is thought to take place.

**Radio Channel:** A band of frequencies or wavelengths of a width sufficient to permit of its use for radio communication. The width of a channel depends upon the type of transmission.

**Radio Compass:** A direction finder used for navigational purposes.

**Radio Frequency:** A frequency higher than those corresponding to normally audible sound waves. (See Audio Frequency).

**Radio Frequency Choke:** An inductance presenting high impedance to an R.F. impulse, while allowing the passage of low frequencies and direct current.

**Radio-Frequency Transformer:** A transformer for use with radio-frequency currents.

**Radio Receiver:** A device for converting radio waves into perceptible signals.

**Radio Transmission:** The transmission of signals by means of radiated electromagnetic waves originating in a constructed circuit.

**Radio Transmitter:** A device for producing radio-frequency power, with means for producing a signal.

**Reactance:** The opposition offered to alternating current by a coil or a condenser.

**Reactance, Capacitive:** This term is used to denote the opposition offered by a condenser to alternating currents, the reactance of a condenser being inversely proportional to its capacity and the frequency of the current. Thus the greater the capacity or the higher the frequency the less the reactance.

**Reactance, Inductive:** With an inductance the effect is totally opposite from that of a condenser, reactance being zero to direct current and increasing directly as the frequency rises.

**Rectifier:** A device for converting alternating current to one-way current. Such devices include vacuum-tube rectifiers, mercury-vapour rectifiers, detector valves, crystal detectors, etc. The rectified current is pulsating D.C.

**Reflected Load:** The apparent load reflected across the primary of a transformer when an impedance is connected across the secondary winding. The reflected load may be either higher or lower than the secondary load according to the turns ratio of the transformer.

**Reflex:** A circuit whereby a valve may act both as a radio frequency and audio frequency amplifier at the same time.

**Regeneration:** The process by which a part of the output power of an amplifying device reacts upon the input circuit in such a manner as to reinforce the initial power, thereby increasing the amplification. (Sometimes called "feedback" or "reaction.")

**Regenerative Detector:** A vacuum valve detector combined with regenerative feed-back.

**Relay:** An electro-magnetic unit used to control the action of circuits by the application of an electrical impulse. Relays are usually used to control circuits at a distance, for protective purposes and to actuate heavy-duty circuits by the use of relatively low power.

**Resistance:** The opposition offered to a flow of current. The resistance of any material is inversely proportional to its cross sectional area and directly proportional to its length.

**Resistivity:** Specific resistance.

**Resistor:** Device used to drop voltage and oppose the flow of current in a circuit. An increase in operating temperature causes an increase in resistance with wire-wound resistors and a decrease in resistance with carbon resistors. All resistors therefore should be operated well within their maximum wattage ratings if the correct resistance is to be maintained.

**Resonance:** In an A.C. circuit containing inductance and capacity, there is present inductive and capacitative reactance in addition to ohmic resistance. At one particular frequency the inductive and capacitative reactances cancel out and there remains only pure resistance to oppose the flow of current. This circuit condition is known as Resonance, and the circuit is said to be resonant at the appropriate frequency.

**Resonance Frequency:** The frequency to which a cube circuit is resonant.

**R.F.:** Radio frequency.

**Rheostat:** A variable resistance connected in a circuit to vary the amount of current flowing through it.

**R.M.S.:** Root mean square. The effective value of alternating current units.

**Rotary Converter:** A machine for converting direct current into alternating current.

**Rotor Plates:** The movable plates of a variable condenser.

**Screen:** In a cathode ray tube the surface on which the visual graph appears.

**Screen Grid:** An element in a valve used to shield one element from another.

**Secondary:** In a transformer the winding in which a voltage is induced.

**Secondary Emission:** Electron emission under the influence of electron or ion bombardment.

**Selectivity:** The ability of a receiver to discriminate against signals of frequencies differing from that of the desired signal. The overall selectivity will depend upon the selectivity of the individual tuned circuits and the number of such circuits.

**Self-bias:** A bias produced by the flow of grid current through a resistor.

**Sensitivity:** The degree to which a radio receiver responds to signals of the frequency to which it is tuned.

**Series:** Method of connecting cells, resistors or other components in such a way that the current flows through each in turn.

**S.G.:** Screen Grid.

**Shunt:** In meters a low resistance placed across the meter movement to carry a proportional part of the total current flow.

**Side Bands:** The bands of frequencies, one on either side of the carrier frequency, produced by the process of modulation.

**Signal:** The intelligence message or effect conveyed in communication.

**Signal Generator:** An oscillator.

**Sine Wave:** The wave traced by the sine of an angle as the angle is rotated through 360 deg. Alternating current values follow a sine wave with respect to time.

**Single Side-Band Transmission:** That method of operation in which one side band is transmitted, and the other side band is suppressed.

**Skin Effect:** Due to the fact that radio frequency currents do not act in the same manner as direct or low frequency ones, the current tending to flow on the outside of the conductor rather than through the centre. For this reason stranded wires or wire with a fairly large surface are used for short waves.

**Solenoid:** Coil of wire wound in the form of a cylinder, acts like a magnet when a current is flowing through the winding.

**Space Charge:** Electrons emitted from the filament which tend to crowd round the filament.

**Stability:** The ability of a receiver to remain on a given frequency once it is tuned on to it.

**Static:** Atmospheric electricity.

**Stator Plates:** The fixed plates of a variable condenser.

**Strays:** Electromagnetic disturbances in radio reception other than those produced by radio transmitting systems.

**Sulphation:** The forming of a hard deposition of lead sulphide on the plates of an accumulator. Unless immediate steps are taken to remove this the accumulator will soon become useless. Due usually to allowing the accumulator to stand for long periods in a discharged condition. It is quite often possible to decompose this lead sulphate by giving the accumulator a long overcharge at a low rate.

**Superhetrodyne:** Type of receiver in which the incoming signal is changed to a lower (intermediate) frequency. It is possible by this means to obtain greater selectivity and also higher stability and gain.

**Synchronous:** Two or more operations occurring in unison.

**Telephone Receiver:** An electro-acoustic transducer actuated by power from an electrical system and supplying power to an acoustic system, the wave form in the acoustic system corresponding to the wave form in the electrical system.

**Television:** The electrical transmission of a succession of images and their reception in such a way as to give a substantially continuous reproduction of the object or scene before the eye of a distant observer.

**Tetrode:** A tube having four elements—Cathode, Control Grid, Screen Grid and Plate.

**Thermionic Emission:** Electron or ion emission under the influence of heat.

**Thermionic Tube:** An electron tube in which the electron emission is produced by the heating of an electrode.

**Total Emission:** The value of the current carried by electrons emitted from a cathode under the influence of a voltage such as will draw away all the electrons emitted.

**Transceiver:** A unit which combines both the transmitter and receiver. Used extensively in field work where size and portability are of major importance.

**Transconductance:** The ratio of the change in the current in the circuit of an electrode to the change in the voltage on another electrode, under the condition that all other voltages remain unchanged.

**Transducer:** A device actuated by power from one system and supplying power to another system. These systems may be electrical, mechanical, or acoustic.

**Transformer:** Consists essentially of two coils in close proximity but not directly connected. Energy is transferred from one winding to the other by virtue of electro-magnetic induction.

**Transmission Line:** A system of conductors carrying signal impulses from one place to another.

**T.R.F. Receiver:** A radio in which the signal frequency is led through several amplifying stages resonant with the incoming signal.

**Trickle Charger:** A battery charger which charges at a low rate, generally about ½ an ampere.

**Tickler:** The reaction winding on a former.

**Trimmer:** A small condenser used to balance out small differences existing between sections of a gang condenser or coils.

**Triode:** A valve of three electrodes, consisting of cathode or filament, grid and plate.

**Tube:** Valve.

**Tuned Circuit:** A circuit in which one or more components are adjustable to produce resonance to a desired frequency.

**Tuning:** The adjustment of a circuit or system to secure optimum performance in relation to a frequency; commonly, the adjustment of a circuit or circuits to resonance.

**Tweeter:** A loud speaker designed to reproduce the higher audio frequencies.

**Unidirectional:** In one direction.

**V:** Voltage. Volts.

**Vacuum Tube:** A device consisting of a number of electrodes contained within an evacuated enclosure.

**Vacuum Tube Voltmeter:** A device utilising the characteristics of a vacuum tube for measuring alternating voltages.

**Valve:** A tube containing two or more electrodes, usually exhausted of air or may be gas filled.

**Vibrator:** A mechanical interruptor.

**Vibrator Unit:** This consists of a transformer connected to a Vibrator, which enables high tension (voltage) for a radio receiver to be obtained from a low voltage battery or accumulator.

**Video:** Term meaning a picture or vision used in television.

**Voice Coil:** The small coil attached to the diaphragm of a dynamic speaker, and actuated by connection to the secondary winding of a matching transformer.

**Volt:** The unit of electrical pressure. A pressure of one volt will force one ampere of current through one ohm of resistance.

**Voltage Amplification:** The ratio of the alternating voltage produced at the output terminals of an amplifier to the alternating voltage impressed at the input terminals.

**Voltage Divider:** Any resistance or system of resistances connected across a D.C. supply from positive to negative so that differing values of voltage are available from the voltage dividing system. A volume control or potentiometer also acts as a voltage divider, when used for controlling audio voltages.

**Voltage Drop:** The voltage developed across the component by the passage of current through it.

**Volt Meter:** A meter designed to measure electrical pressure.

**W:** Symbol for electrical power in Watts.

**Watt:** The practical unit of power and is the product of volts and amps.

**Wattage Rating:** The amount of power a given device is capable of dissipating.

**Wave:** (a) A propagated disturbance, usually periodic, as an electric wave or sound wave; (b) a single cycle of such a disturbance; or, (c) a periodic variation as represented by a graph.

**Wavelength:** The distance between the crests of a wave is called the wavelength and is measured in metres.

**Wavemeter:** An instrument consisting fundamentally of a coil condenser and a calibrated dial used for checking the frequency or wavelength of the signal received.

**Wave Trap:** An inductance capacity combination used to prevent unwanted signals from interfering with the wanted signal.

**Wheatstone Bridge:** Device used for the measurement of resistance by means of balancing the unknown resistor against known ones.

**Woofer:** A speaker designed for the reproduction of bass or low frequency notes.

**X:** Symbol for reactance.

**XC:** Capacitive reactance.

**XI:** Inductive reactance.

**X-Ray:** The rays produced by a flow of electrons projected at high velocity against a target. The frequency is much higher than those used in radio communication.

**Y:** Symbol used to denote admittance in ohms.

**Z:** The symbol for electrical impedance measured in ohms.

**Zero Beat:** A condition wherein two frequencies being fixed have exactly the same numerical value.

# THE PROBE TRACER

AMATEUR constructors who have made two or three receivers or amplifiers usually have sufficient practical knowledge to service their own sets and those of their friends. The most common methods used are voltage measurements, with condenser and headphones.

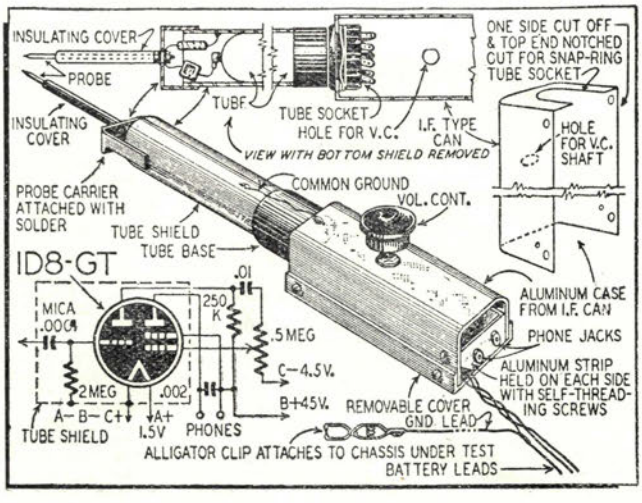
The device shown in the sketch should appeal to many constructors because of its simplicity, low cost and effectiveness. The instrument is easy to build, and the diagrams will give a fair idea of the compact form, though each constructor will probably design a shape to suit the materials available.

It is a hand-held tool having a probe for introduction into the chassis under test, and two leads, one going to headphones. The probe may be applied to r.f., i.f. or audio circuits. The tracer can be used to listen to the signal at any point. Distortion, hum or noise can be traced to the stage at which it first occurs. The tracer will indicate filtering hum, at the output of the filter if that unit is defective. If screen and cathode by-passes are effective, no signals or very weak signals will be found at cathodes or screen-grids.

The tracer is so sensitive that it need only be brought close to the grid or plate lead of any high level stage. Oscillation of the mixer tube is readily determined, as a signal is obtained from the oscillator grid or plate, which differs from the output signal by the intermediate frequency (that is if a broadcast of sufficient strength, at the oscillator frequency, is receivable by the set). Signals may be detected at the aerial coil with the tracer volume control well advanced.

Batteries are used because of the simplicity and cheapness of the method. The batteries are wired to a tube socket and the cable from the tracer terminates in a plug which is pushed in the socket when required. No switch is then needed.

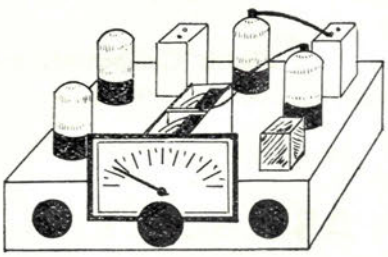
From my conversations with many constructors I believe this instrument fills a need. With the addition of a coil, condenser and aerial it becomes a one-tube radio.—Hubert L. Bailey.



# THE "TRAVELLER" PORTABLE

By H. Vernon Wheatley.

PORTABLE receivers have the very good point in that they often come in surprisingly handy. I can recollect one occasion when I was the only person in a small district to receive radio programmes for five days. The power lines had fallen down all over the province due to heavy snowfall and consequently there was no power. I had a small portable, home-built after the one about to be described, and you can imagine my popularity on the Saturday afternoon when the races were on. However, that is merely by the way. The Traveller Portable is worthy of a place in any home where electric power is not available and where cost is a consideration. It is a boon, too, in a sickroom and there is no need to enlarge upon its advantages while travelling or while picnicing.



Circuit "A" shows the superheterodyne receiver, with the component values shown in the body. The set uses a type IA7GT tube as a converter, followed by a type IN5GT in the I.F. stage. The detector tube is a type IH5GT, while the pentode output tube is a type IA5GT. The miniature button base tube, IS4, can be used in the second detector stage in place of the IH5GT, grid-leak detection being used to gain extra sensitivity at the expense of tonal quality. The detector circuit is modified slightly, as is obvious. However, I do not propose to deviate, as the receiver is to be described according to the circuit diagram. The output tube may be substituted with a type 1Q5GT.

If you will note in the plate circuit of the output tube, you will see a .005 mfd. condenser. The loop aerial, the ganged condenser, the oscillator coil and the iron-cored intermediate frequency transformers should match, and you can be sure on this point if the components are bought in kit form.

The design follows conventional lines and uses standard components. The metal chassis measures 8½in. x 4½in. x 2in. deep, but these dimensions may be lessened considerably.

### LAYOUT

The converter section is located to the left of the chassis, the I.F. transformer to the rear and the tube towards the front. The tuning dial and ganged condenser is mounted to the left of centre of the chassis and the I.F. output transformer is bolted just to the left at the rear of the tuning condenser. The I.F. tube is mounted somewhere midway between the two I.F. transformers. The second detector tube is mounted close to the output I.F. transformer. The output pentode tube is affixed near to the detector. Thus the set is mounted and wired more or less in "line" which is easy for the average constructor to follow. All battery leads are brought out through a hole cut into the rear of the chassis. The oscillator coil is mounted near to the 1A7GT tube.

When wiring the set, it is advisable to use shielded wire when building the oscillator grid circuit in the converter section. The I.F. transformer to IN5GT grid connection should be wired with shielded wire and the same applies to the same connection in the second detector circuit. This will eliminate any stray "bugs" which may decide to invade the good work. The loop aerial, by means of its flexible connecting wire is wired into the converter section through a small hole in the left of the chassis.

Automatic grid bias is used. Sometimes this method is not advisable in low-powered receivers, but in this instance, the loss is very low . . . indeed so low that it is not worthy of consideration. Also, it eliminates another battery, which is very desirable in a portable receiver.

Incidentally, the double-pole-single-throw battery switch, which cuts off both "A" and "B" batteries, is mounted to the left of the chassis.

The three .01, the .02 and the .005 mfd. condensers are tubular types, while the rest are mica types, excluding, of course, the bias condenser.

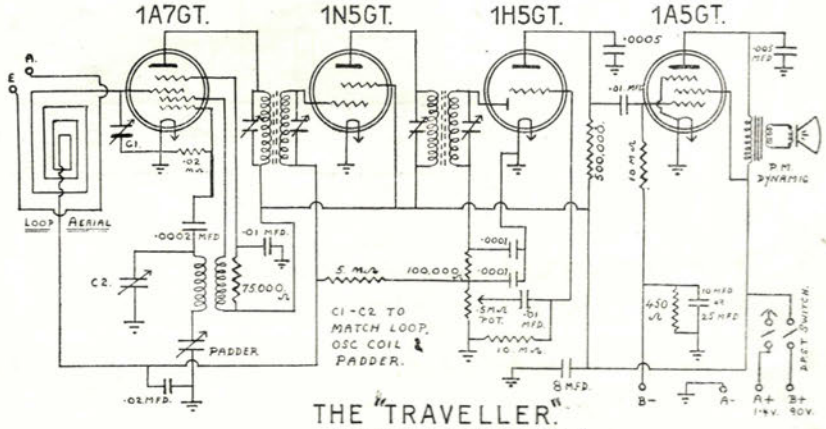
A 1.5 volt "A" battery, or, in other words, a No. 6 dry cell, heats the 1.4 volt filaments, and the "B" supply consists of two 45-volt portable type batteries wired in series to give 90 volts.

Once the speaker is screwed to its baffle behind the speaker grille, the set is placed into position and held there by a strip of wood running along the back of the chassis, and held to the base of the cabinet by two wood screws. The batteries are placed inside the cabinet and if possible, the "B" batteries are stowed together on the chassis top near the output tube. The "A" battery may be fixed by holding it in a light "U" clamp screwed to the side of the inside of the cabinet, adjacent to the "B" batteries. The connections are then made and left till battery replacement.

The receiver must point end towards the broadcasting station desired to be received. The controls are then manipulated in the usual way. With an outside aerial and earth connected, the set operates in the usual way, no directional properties being apparent. Good local reception is attained using the loop aerial, plus reception of the more powerful N.Z. broadcasting stations at night. With an outside aerial and earth, reception is the same as what would be expected of a normal receiver.

Satisfactory reception can be achieved almost everywhere, possibly excepting in a metal bodied saloon or sedan car. Battery drain is very low, particularly as regards the "B" batteries, and you will find it quite economical to run. You will find, also, that it is a very able performer in every way.

A.




THE "TRAVELLER" 4 TUBE PORTABLE.

**CIRCUIT A**

## The "TRAVELLER" PARTS LIST

1 Chassis
1 Dial
1 2-Gang Condenser.
2 Iron Core 465 k.c. I.F. Transformers
1 "Ensign" Oscillator Coil.
1 Frame Aerial
1 each IA5GT, IA7GT, IH5GT, IN5GT Valves
4 Valve Sockets for above
1 Padder
1 D.P.S.T. Switch
1 500,000 ohm Potentiometer
8 Resistors
2 .0001 mfd Mica Condensers
1 .002 mfd Mica Condenser
1 .0005 mfd Tubular Condenser
1 .005 mfd Tubular Condenser
1 .01 mfd Tubular Condenser
1 .02 mfd Tubular Condenser
1 25 mfd Electrolytic Condenser
1 8 mfd Electrolytic Condenser
2 Terminal Strips
2 Knobs
SUNDRIES: Hook-up Wire, Solder Lugs, Nuts and Bolts, Grid Clips, etc.

**COMPLETE KIT OF PARTS as above— £8/19/6**
Cat. No. TK2055

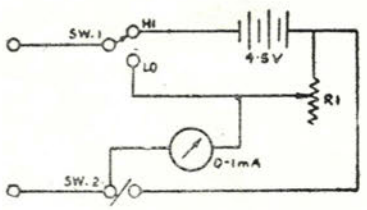
**With Batteries—**
Cat. No. TK2055A **£10/17/6**

**Speaker for use with above:**
Cat. No. TS950—5in. ALNICO 5 American Speaker complete with Transformer .. **24/11**

## Useful Ohmmeter

THE circuit of a double-purpose ohmmeter reproduced below will interest radio technicians who have need of a simple ohmmeter that is capable of measuring both high and low resistors.

A 4.5 volt battery is used to operate the meter, and R1, 5,000 ohms wire-wound variable resistor is the zero setting control in both cases. It will of course be necessary to calibrate the meter by using resistors of known value, but if a good quality meter is used, it will be possible to obtain ready calibrated scales for the high range.




The low range can be read to within 0.5 ohm with reasonable accuracy, and is therefore useful for testing coils and other low resistance components. Switches S1 and S2 comprise a single switch movement, such as a Yaxley. With Sw. 1 in the upper position, and Sw. 2 open, the meter will read high ohms.

"Australasian Radio World."

# THE "Easy Built" SUPER 5

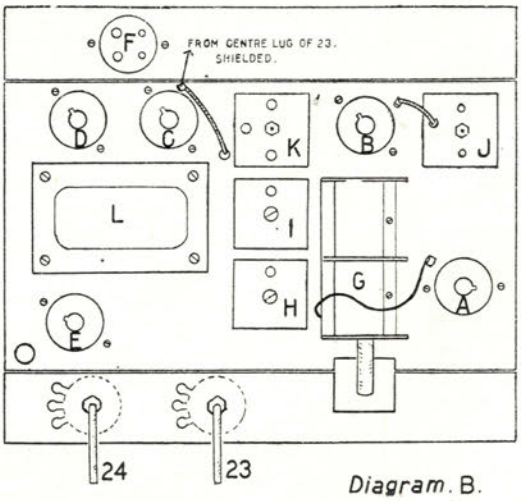
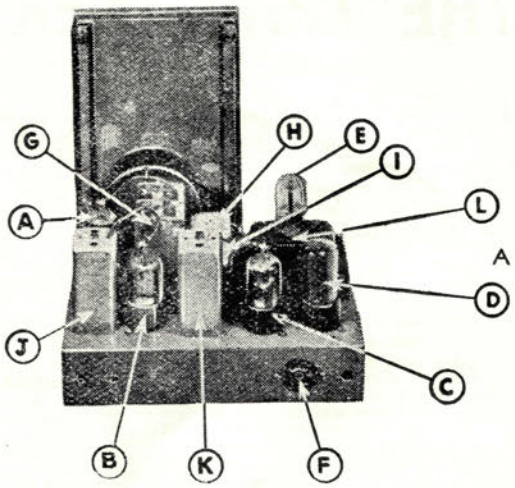



Diagram. B.




All you need is a Soldering Iron, Screwdriver and Pliers.

These 3 Diagrams show how Under Chassis Components are numbered, and On Top of Chassis Components lettered.

Radio Set building just couldn't be any easier — when you build with a

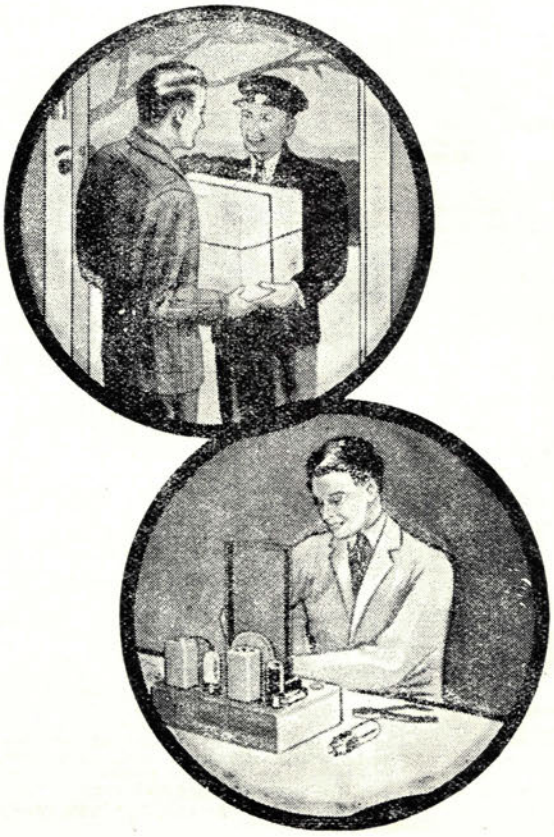
## LAMPHOUSE "EASY BUILT" KIT

A 3,500 word article plus two Charts on the Construction of this Receiver are supplied with each Kit.

All components right down to the last nut and bolt are supplied with

## The Lamphouse Kit of Parts

Features an "Oxford" 3 Colour Dial—7½in x 5½in. Beautifully Veneered Cabinet.



It's one of a series of Kit Sets being produced by THE LAMPHOUSE that can be built by any "boy" from 9 to 90 !

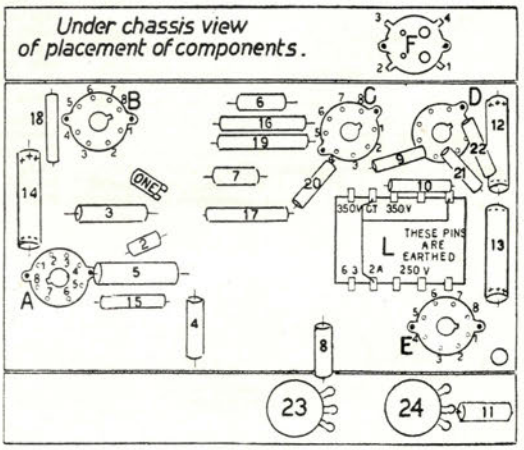



Diagram. C.

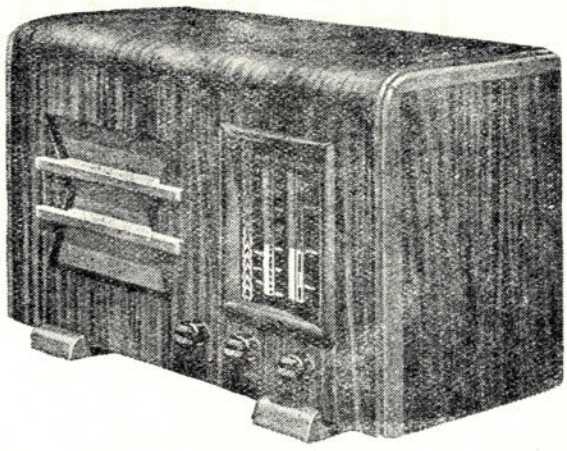
The 2 Charts used give a brief description of the parts and their corresponding numbers or letters.

All you need to do is solder "No. 3 to Red Lug of "1" and so on until wiring is completed, and you've built a really Professional 5 Valve Broadcast Radio yourself.

IT SOUNDS EASY ——— AND IT IS EASY !

# THE "Easy Built" SUPER 5

## THE LATEST IN KITSET CONSTRUCTION!



IN response to numerous requests we are bringing out a complete range of Receivers constructed on the "EASY-BUILT" System — the new method of Radio Set construction introduced by "THE LAMPHOUSE."

This system caters for those who have not had any, or had very little previous experience in Set Building, yet would like to build up Multi-Valve Radios; Electric, Portable, etc.

All connections are made either by numbers or letters and no knowledge of Radio diagrams is necessary.

Charts for rechecking the wiring are also given.

The latest "EASY-BUILT" Portable Radio is described elsewhere in this issue while the "EASY-BUILT" 5 outlined herewith was designed some time ago and has truly proved itself over the past year.

These Kits are supplied complete right down to the last nut and bolt, and supplied at a keen Lamphouse price.

Read all about our "EASY-BUILT CLIPPER" and decide on which Radio you are going to make — YOURSELF!!

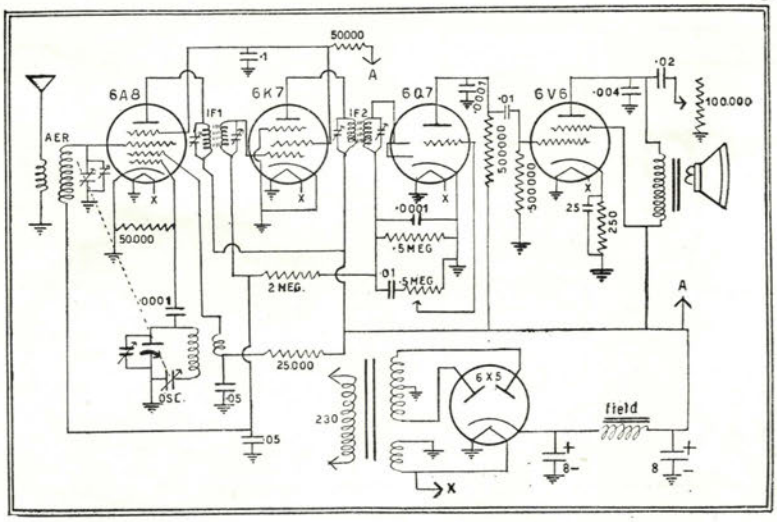



Diagram. A

## THE "EASY BUILT" SUPER 5

### PARTS LIST

1 Chassis.
1 6K7GT Valve.
1 6A8GT Valve.
1 6Q7GT Valve.
1 6V6GT Valve.
1 6X5GT Valve.
1 2-gang Variable Condenser.
1 6.3 volt 60 M.A. Power Transformer.
2 I.F. Transformers.
1 Aerial Coil (Shielded).
1 Oscillator Coil (Shielded).
1 Three Colour Dial.
6 Valve Sockets.
2 8 mfd. Electrolytics.
1 25 mfd. 25-volt Electrolytic.
3 .0001 mfd. Mica Condensers.
1 .004 mfd. Tubular Condenser.
2 .01 mfd. Tubular Condensers.
1 .02 mfd. Tubular Condenser.
2 .05 mfd. Tubular Condensers.
1 .1 mfd. Tubular Condenser.
1 Padder Condenser.
1 100,000 ohm Potentiometer.
1 500,000 ohm Potentiometer.
8 1-watt Resistors.
2 Coils Pushback Wire.
3 Knobs.
2 doz. Nuts and Bolts.
3 Grid Clips.
2 doz. Solder Lugs.
6in. Shielded Grid Wire.

**Complete "LAMPHOUSE" Kit as above—**

Cat. No. TK2050 . **£11/10/-**

With Speaker .. **£14/2/6**

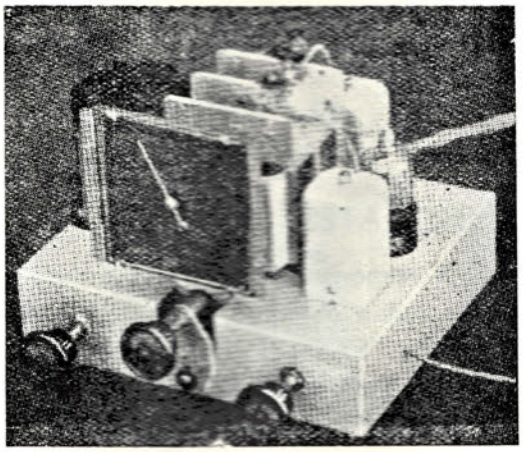
With Veneered Mantel Cabinet and Speaker .. **£16/19/6**

"LAMPHOUSE" RADIO BOOKLETS ARE INTERESTING AND INSTRUCTIVE
CIRCUIT BOOK 2/6 — INSTRUCTION COURSE 2/6 — DATA BOOK 3/6

# THE "SCOUT"

(Abridged from "Radio World.)

*Using only two valves, this modern version of one of our most popular battery-operated receivers is capable of giving results quite out of proportion to its modest cost. The circuit is a t.r.f. one.*



A general view of the chassis.

TO-DAY the superhet is supreme, and we doubt if there is a t.r.f. type of receiver available in factory-made models to-day. Which is a state of affairs much to be deplored, for the humble t.r.f. set has its own place in the scheme of things. Although not as selective as the superheterodyne circuit, the t.r.f. receiver is simple and cheap to build, does not need any delicate adjustment or alignment and will give excellent service within the limitations of its capabilities.

Some time ago a simple t.r.f. type of battery receiver, named "The Scout," was featured, and it proved exceptionally popular, mainly, we fancy, because it offered unequalled value. For the cost of the parts the performance was exceptionally good. The construction and adjustment were so simple that hundreds of novices built up "The Scout," and, without exception, their reports on results were full of praise.

The advent of the latest types of battery valves makes it possible to re-design this circuit and offer it again as an even better proposition.

The same performance is retained yet the number of valves used is cut down from three to two, simply by using that remarkable combination valve, the type 1D8GT.

This valve actually consists of two separate sets of elements in the one glass bulb, yet does not cost twice as much as an ordinary valve, and does not take anything like the amount of current which would be taken by two separate valves carrying out the same work.

### PERFORMANCE.

As might be expected, the selectivity is not up to the standard of a superheterodyne, but otherwise the little set is a fine performer, with ample range to bring in stations from near and far, and with nice tone and sufficient power for ordinary room strength with the loudspeaker.

### CURRENT DRAIN.

The actual figures for the current drain of the receiver are interesting to those who have advanced far enough to appreciate such points.

Only 90 volts of high tension are needed, and the drain is then about 8 milliamps when working at full strength. With this low current drain it becomes quite possible to use light duty batteries and get months of service from them. With standard or heavy duty batteries about a year's service should be obtained from each pair.

The filament current drain is .15 of an ampere at 1.4 volts, and this can be obtained from a single dry cell, or one of the special cells which have been introduced for use with these new valves. Compared to the old idea of three heavy duty "B" batteries and an accumulator, the cost of the battery equipment for this set is only about half the amount which would have covered a set of batteries.

No "C" bias battery is required, as a resistor between "B" negative and "A" negative carries the total current of the receiver and gives a voltage drop sufficient for biassing the pentode portion of the output valve.

Actually this takes about 8 volts away from the effective high tension available, and if greater power is required it would be possible to amend the circuit a shade to allow a bias battery to be used.

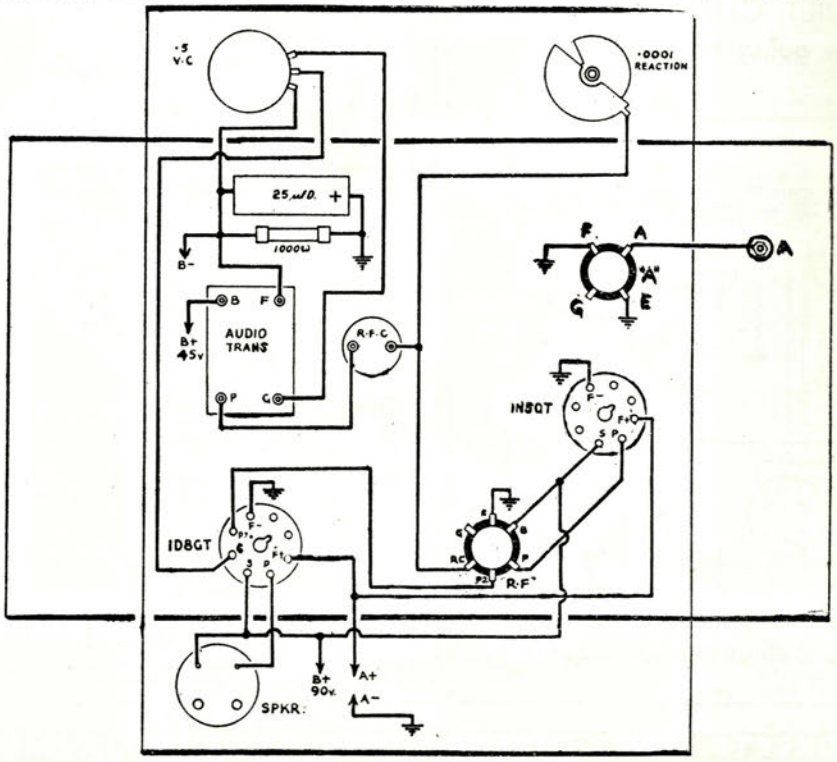
### THE CIRCUIT.

The circuit used follows conventional t.r.f. practice, with an r.f. amplifier stage using a 1N5GT valve. The triode portion of the 1D8GT is used as leaky grid detector, with reaction. This is transformer coupled into the pentode portion of the 1D8GT, which is capable of giving grand power output when used with only 90 volts of h.t.

The reaction is controlled by a reaction condenser in the shape of a midget variable condenser with a nominal capacity rating of .0001 mfds.

### THE PARTS.

Running through the list of parts required for "The Scout" we first come to the base. A ready-drilled steel base for this set is supplied with each "Lamphouse" Kit, and one of these bases should be used so as to be sure to get proper layout and arrangement of the components.




The picture diagram of the wiring.

### COILS.

A great deal depends upon the efficiency of the coils used in a set of this type, in fact, it might be said that the performance of the coils governs the final performance of the set, other things being equal. As usual, the right type of coils to use are the coils which are specially designed for this type of work.

Although home-wound coils could be used with a set of this type, it is not possible to obtain the same degree of efficiency as obtained by the coil factories with their bunch-wound coils of litz stranded wire, with iron cores and high-impedance primaries.

Fortunately, the modern coils are not expensive, so that there becomes little point in trying to use home-wound coils.

### AUDIO TRANSFORMER.

The audio transformer is one of the ordinary 3 or 5 to 1 ratio audio transformers intended for class A amplification, and although the quality of the transformer has a bearing on the tonal quality of the finished receiver the matter is not of great importance as even the cheaper types of modern transformers appear to be capable of giving quite good performance.

### VOLUME CONTROL.

Normally the reaction control is used for controlling the volume, but on strong local stations it is sometimes desirable to have an additional control, and this takes the form of a potentiometer fitted across the secondary of the audio transformer with the grid of the pentode portion of the 1D8GT going to the moving arm so that a portion of the signal developed in the secondary can be picked off for the output valve. This auxiliary control is also helpful in stabilising the set, and cuts out any tendency to "threshold howl" and suchlike troubles which are sometimes encountered in high-gain sets using reaction.

For convenience the filament switch can be included in the volume control, so that on fully retarding the volume the set is switched off.

### REACTION CONDENSER.

The reaction condenser can be any small condenser with a capacity of about .0001 mfds. As will be noticed in the photographs, the original receiver used one of the old-style 23 plate midgets, but we would recommend the use of one of the newer 14 plate types, as the one used was a little on the big side, especially as regards its minimum capacity, so that with a short aerial the set was a little inclined to be unstable down at the very bottom end of the dial. One of the latest types of 14 plate midgets should be a sure cure for this minor difficulty, if it should be encountered.

### ASSEMBLY.

The actual assembly of the components on to the ready-drilled base is just as simple as the assembly of a small meccano model, being merely a matter of fitting screws and nuts as required.

### CONSTRUCTIONAL DETAILS.

Commence the wiring by connecting the Filament connections of both the 1D8GT and IN5GT

Valves. The Filaments of these Tubes represent Pin No. 2 and Pin No. 7.

No. 7 pin of Valve Socket in each case should be earthed to the Chassis, and No. 2 Pin of each Tube Socket should be linked together and a lead taken through the Switch of the Potentiometer and on to A+ connection on A Battery (1½v. Dry Cell). All earths mentioned are made direct to the Chassis at nearest convenient point.

**Aerial Coil:**

The bottom of the primary winding of the Aerial Coil goes to earth. The top goes straight to the Aerial Terminal. The bottom of the secondary winding is earthed, and the top goes to the fixed plates of the front section of the 2-Gang Condenser.

**R.F. Coil with Reaction:**

Bottom of the primary of the R.F. Coil connects to the B+ lug on the Speaker Socket, and also to Pin No. 4 of the 1N5GT Valve, and to Pin No. 4 of the 1D8GT Valve.

You will note that a 4-pin Speaker Plug has two prongs slightly larger than the other two. One of the smaller prongs on the speaker socket should be used for the B+ connection as mentioned above.

The top of primary goes to Pin No. 3 of the 1N5GT Valve. Bottom of secondary is earthed, and top of secondary goes to fixed plates of the rear section of the 2-gang Variable Condenser.

The bottom of the Reaction Coil connects to Pin No. 6 on 1D8GT. Top of Reaction Coil is connected to one side of the R.F. Choke and through a .0001 mfd Mica Condenser to earth. Other side of R.F. Choke goes to one side of the primary of the Audio Transformer.

The Audio Transformer supplied with the Kit Set is not visibly marked 'primary' or 'secondary' but a Colour Code is given with each Transformer supplied.

**Audio Transformer:**

The one side of the primary winding of the Audio Transformer not yet connected goes to the B+ 45 connection. One side of secondary connects to an outside lug of the 500,000 ohm Potentiometer, while the other side of the secondary is connected to the other outside lug. This lead goes also to B— and through a 25 mfd. Electrolytic Condenser and 1,000 ohm. Resistor to earth. The Electrolytic Condenser and the Resistor are connected in parallel, not in series. The centre contact of the 500,000 ohm. Potentiometer connects to Pin No. 5 of the 1D8GT Socket.

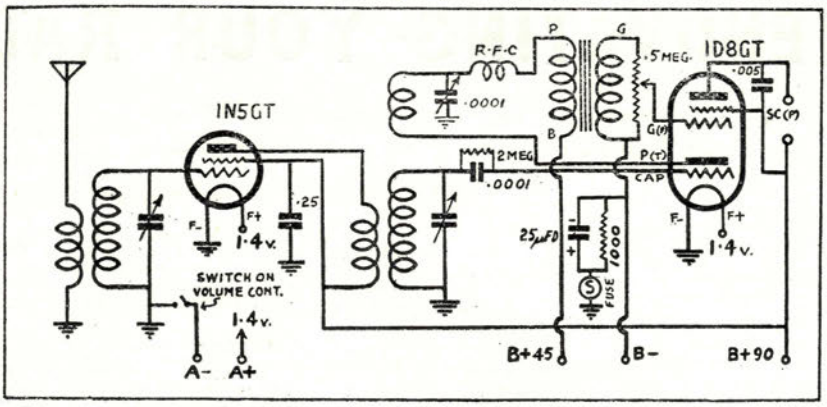
Pin 3 of the 1D8GT Socket goes to the other small Pin on the Speaker Socket. The A— connection on the Battery is connected to earth.

The fixed plates of the front section of t 2-Gang Variable Condenser are connected to the grid cap of the 1N5GT Valve, and the rear plates are connected through a .0001 mfd. Mica Condenser and 2 meg. Resistor in parallel to the grid cap of the 1D8GT.

This completes the wiring.

**Battery Connections:**

Four-wire Battery Cable should be used for bringing connections from Set to Batteries.




**The schematic diagram of the circuit. Note the automatic biassing arrangement which means battery economy.**

A+ = Direct to Pin 2 of 1D8GT Socket.
B+ 90v. = B+ connection on Speaker Socket.
A— = Connected direct to Chassis.
B+ 45 to Primary on Audio Transformer (Blue lead).
B— = To lug on Potentiometer which also connects to 1000 ohm. Resistor and 25 mfd. Electrolytic in parallel.

OPERATION.

After the set has been completed the wiring should be thoroughly checked and the valves should be fitted, also the speaker and then the A battery connected. The B batteries meantime should be kept well in the background.

If by any accident the A leads from the set come in contact with the terminals of the b battery it is almost certain that both valves will be immediately ruined. Blowing out expensive valves by accidental application is a heartbreaking business and every precaution shoul be taken, **before** such an accident happens. As a safety measure some people prefer to have the "A" leads about a foot or 18 inches long, but the B battery leads about three feet long. By making sure that the B batteries never come closer than within two feet of the chassis there is never any chance of an accident to t filaments.

To get back to the operation of the set, the filament circuit should be tested by fitting the "A" cell and watching inside the valves to see that the filament lights up properly. The valves do not emit a bright light, but by carefully peering inside the valves it should be possible to see the thin filament heated up to a dull r If the filament heats up in this way it is usually safe to go ahead with the connection of the b battery, and the set is then ready to tune in stations as required.

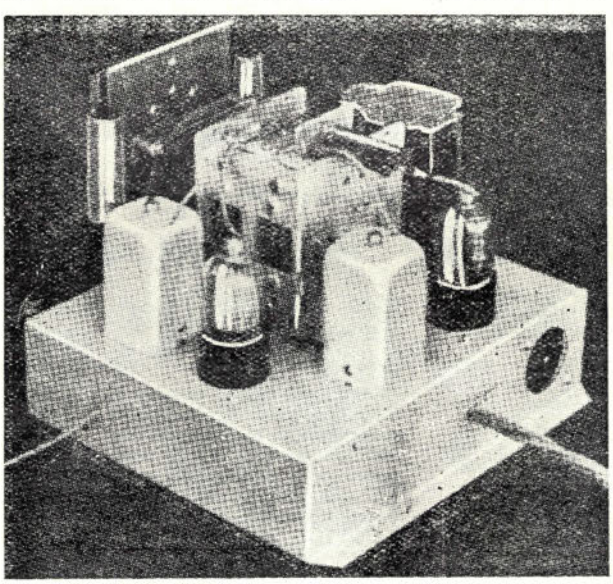
**THE "SCOUT" PARTS LIST.**

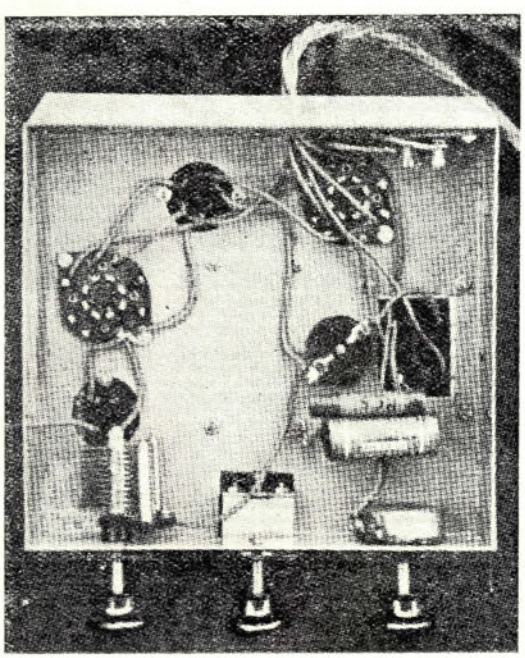
1 Chassis.
1 each Aerial and R.F. with Reaction Coil.
1 2-Gang Tuning Condenser.
1 Small Broadcast Dial.
1 .0001 mfd Midget Variable Condenser.
1 3-1 Audio Transformer.
1 each 1N5GT, 1D8GT Valves.
3 Valve Sockets.
1 500,000 ohm. Potentiometer with Switch.
1 .0001 mfd. Mica Condenser.
1 .005 mfd. Tubular Condenser.
1 .25 mfd. Tubular Condenser.
1 25 mfd.-25 Volt Tubular Electrolytic Condenser.
2 Resistors. 3 Knobs.
1 R.F. Choke. 3ft. Battery Cable.
SUNDRIES: Nuts and Bolts, Lugs, Hook-up Wire, Grid Clips.

COMPLETE KIT OF PARTS AS ABOVE
**Cat. No. TK2056 .. £6/12/6**

WITH BATTERIES.
2 — 45 Volt Portable Batteries.
1 — 1½ Volt "A" Battery.
**Cat. No. TK2056A .. £8/9/6**

SUITABLE SPEAKER.
5in. Alnico P.M. Speaker (with Transformer)—
**Cat. No. TS950 .. 24/11 D.**





**Two views of the "Scout" chassis. The one on the left gives a good idea of the wiring and under-panel layout.**

# RENOVATING YOUR RADIO CABINET

*Simple instructions for renovating scratched or marked Cabinets, with hints on re-polishing, are given in this article.*

THERE is no reason why a scratched or dull cabinet should be tolerated, for, after all, a radio set is an article of furniture as well as a musical instrument. The majority of marks that make a cabinet look shabby are scratches, chips, and finger marks, and such cabinets can easily be rejuvenated by the following method, which should be followed for both french polished and sprayed cabinets.

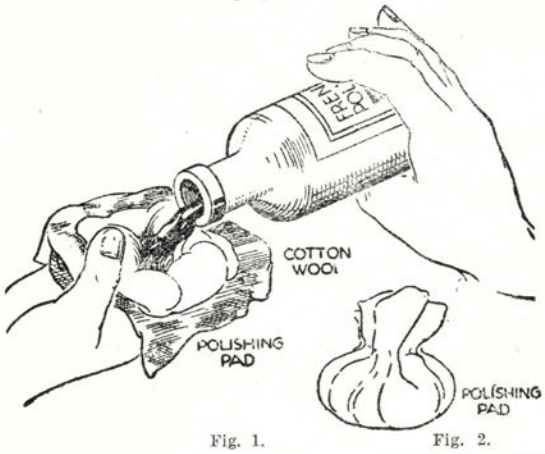



Fig. 1.




Fig. 2.

The materials required are: A small bottle of french polish, a "water" stain in powder form to match the colour of the cabinet, and a fine paint brush.

### FOR SCRATCHED SURFACES

To touch up scratches or chips, proceed as follows: Place a little polish in a saucer and add just enough of the powder stain to colour the mixture, mix well and gradually add more powder until the approximate colour required is obtained. It is as well to be a little on the light side, as the colour can always be darkened when adding a second coat.

Thoroughly clean the scratch with a cloth dipped in methylated spirits and carefully "paint" the scratch with the mixture of stain and polish, taking very great care not to get any on the polished surface of the cabinet, or the surface will be spoilt. Should the mixture get on the cabinet, wipe it away as quickly as possible.

When the first coat has dried thoroughly, a second may be applied, and if the scratch has been coloured to match the rest of the cabinet by the first application of the mixture, the second "dose" should be of polish only. Otherwise, continue the treatment as outlined above with another coating of the mixture. When tackled in this way, the scratch will soon be filled and will scarcely be discernible.

### USING PLASTIC WOOD

Some scratches, or chips, are too deep to be removed by this method and plastic wood should be used. Since it will not take a stain, the coloured variety should be used and a little pressed firmly into the scratch with the blade of a penknife. Here, again, take care not to allow any of the plastic wood to creep on to the rest of the cabinet, as it contains a powerful solvent which will quickly attack the polish and give it a matt surface. Smooth off the surface of the wood as soon as it is applied, and leave to dry for at least an hour. Plastic wood contracts as it dries, so the surface when applied should be just slightly above the level of the cabinet. When hard, it should be carefully levelled down with a very fine sandpaper. The mixture of stain and polish may then be applied as before, and any irregularities in the surface of the plastic wood will be levelled up by this application. This method is so effective that the position of a scratch may be practically hidden.

When a cabinet is merely dull, the application of a little "oilet" or "liquid glass" coupled with plenty of "elbow grease" should be tried. It is surprising what a few minutes of such treatment will do, but if no improvement is obtained, a polish may be tried. Any of the many commercial car polishes (cellulose type) are extremely good, not only for removing finger marks and generally cleaning up the cabinet, but also in giving an extremely high polish and removing fine scratches from most of the finishes used in cabinet manufacture. Such treatment is of no avail when the cabinet has been hand french polished.

Perhaps the worst kind of cabinet to tackle is one on which the actual polish surface has worn off due to continual use and polishing. Too many people make a habit of regularly polishing their cabinet with polish, with the result that they do more harm than good, and gradually remove the surface. Rub it over occasionally by all means, but use only a soft, clean duster with no polish.

In such a case, the only way to make a good job of the cabinet is to "strip" it; that is, to remove all that remains of the existing polished surface by well rubbing the cabinet with fine sandpaper. Always sandpaper the way of the grain, never across the grain, and make a perfectly smooth and uniform surface before attempting any re-polishing. After sandpapering, clean the cabinet with a duster and then with a rag moistened with methylated spirits to remove all grease.

This time, however, the polish cannot be applied with a brush, or a very uneven surface, showing all brush marks, would result. The following method should be followed, and although it may seem a little tedious, it will render results equal to a new cabinet, and is well worth the time and patience.

### POLISHING HINTS

Place a small amount of cotton wool in the centre of a square of linen or fine rag as in Fig. 1, and pour sufficient of the staining polish (which should be made up as described above), on to the wool so as to damp it right through. Screw the rag round the wool so as to make it a tight pad, as in Fig. 2, with a smooth polishing surface. Slight pressure of the fingers on the sides of the pad should cause some of the polish to ooze through the linen.

Applying the polish in circular motions, as indicated in Fig. 3, with a gentle but firm pressure, taking care to cover every portion of the surface with a layer of polish. If more polish is required, never pour it on the rag, but undo the pad and add polish to the cotton wool. If the pad sticks to the surface being polished, apply a spot of linseed oil to the actual polishing surface of the pad. On no account add more than one spot unless the surface is extremely large. This will prevent the pad sticking as the polish hardens.

When the first application has dried thoroughly, rub it over very lightly with extra-fine sandpaper, working the way of the grain as before, and then apply another layer of polish, but using, this time, a slightly drier pad, and working in very small circles. Work up and down the surface in these small circles, and, at the end of each line, draw the pad very lightly across the newly-polished surface in the direction of the grain.

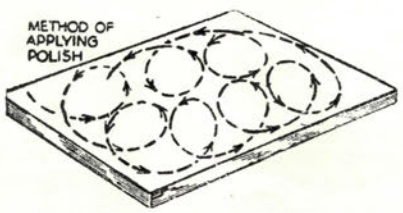



Fig. 3.

If it is found that the surface is patchy when dry, i.e., polished in some places, but with dull patches here and there, the surface must be lightly sandpapered once more and the above procedure repeated again, until, finally, a highly-polished surface is obtained. Practice, of course, makes a great deal of difference to the ease with which a cabinet may be completely repolished.

Finally, there are one or two hints that may save time and patience, viz., never attempt polishing except in a dry atmosphere; always see that the pad is clean and smooth and, above all, never go over a polished surface until it has become quite hard. It is not the amount of polish, nor the pressure, that produces a good surface, simply the continued rubbing. Speed does not matter, but rather an even, steady circular movement with even pressure.

If the pad is stopped on the work, a mark will be made which can only be removed by sandpapering off the entire surface.


## PLASTIC WOOD

The perfect moulding material. A plastic material which is easily worked. A high-class filler for all types of jobs. Used by Carpenters, Joiners, Painters, Mechanics, Farmers and House holders. Hardens very rapidly, and, like wood, can be cut, sawn, planed, filed, nailed or screwed. It can be varnished, stained, painted or polished. Grease-proof, waterproof and weather-proof.

Cat. No. TU166—2oz. Tin .. **2/11**

Cat. No. TU168—1oz. Tube .. **1/7**

## "3-IN-1" OIL

Motors, Lawnmowers, Vacuum Cleaners, etc., are all very hard to replace. Keep them in A1 order with "3-in-1."

"3-in-1" also works miracles in brightening dull furniture and woodwork. A few drops on any soft cloth wrung out in water gives you a dusting and polishing cloth that not only polishes but also cleans and protects the finest finish.

Cat. No, TU151—3oz. Can .. **1/10½**

# The "BROADCAST SUPER FOUR"

(By F. H. Adams).

*HERE is an excellent little Circuit featuring Philip's type Tubes which operate with higher gain than their American counterparts.*

*Simplicity of operation is the outstanding feature.*

*An amazing performer for a 4-Valve A.C. Circuit as all who construct it will realise.*

CIRCUIT DIAGRAM.

The most popular type of receiver for general utility is probably the five-valve superheterodyne, the conventional model with single tuning knob and a volume control being eminently suitable for household use. These advantages may also be realised in a four-valve model with comparable performance by employing high-mu tubes in an orthodox circuit. Each of the Philips tubes specified operates with higher gain than its American counterpart.

The most interesting tube in the line-up is probably type EBL31, which consists of a duo-diode, output pentode combination, with grid-cap similar to R.F. types. This tube has very high sensitivity to enable the pentode section to be driven directly from the rectifying diode plate.

CIRCUIT.

The converter tube ECH35 is similar to type 6K8, but has higher transconductance and a higher A.C. plate resistance, with the result that a higher ratio of I.F. signal voltage to input R.F. signal voltage may be expected. A pair of coils designed for valve 6K8 is suitable, but in cases where instability is experienced, a resistor of from 100 to 200 ohms in the lead to the oscillator grid and/or the mixer grid is recommended in the data sheet. It is the writer's experience that 150 ohms between the .0001 mfds. mica coupling condenser and the oscillator grid is usually necessary with standard coils. The resistor should be soldered directly to the oscillator grid terminal along with the 50,000 ohms grid-leak. The value of the latter is specified in the data sheet as 59,000 ohms, but it will be found that 50,000 ohms is usually quite suitable.

A very convenient feature of the converter tube is that 100 volts are required for both oscillator anode and screen-grid, thus making it feasible to supply both of these electrodes and the screen of the E.F.39 (which also requires 100 volts) through the same dropping resistor of 20,000 ohms. Two good 10,000 ohms one watt resistors should be used to make up the required 1.25 watts.

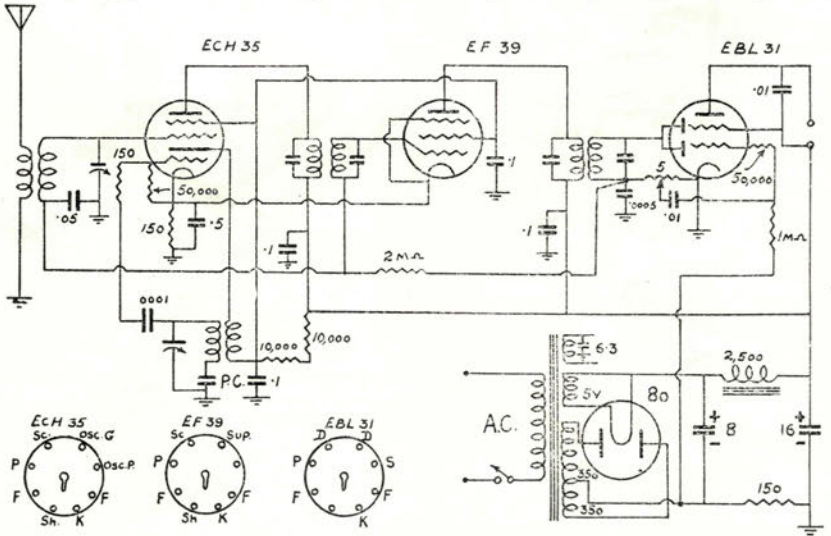
The signal grids of both converter and I.F. amplifier are connected to the A.V.C. circuit, which is the simplest possible arrangement and functions to reduce the gain of these tubes according to the strength of the signal tuned-in. Strong signals are reduced to a convenient level while weaker signals are not so heavily reduced. The practical result is that I.F. signal voltages applied to the diode plates are maintained at a more constant average level than if A.V.C. was not employed, and speaker volume is more readily controlled by adjustment of the volume control.

As already mentioned, back-bias is employed for the grid of the EBL31 so that the cathode and the diode load resistor and condenser may be directly earthed. The use of a cathode resistor, while suitable for biassing the grid of the pentode section, would result in a positive bias being applied to the grids of the converter and I.F. amplifier which would be rather disastrous. The amateur constructor is advised to adhere to the circuit arrangement illustrated, the only precautions being to connect both the negative terminal of the first electrolytic, and the 1 megohm grid-leak, to the centre-tap of the power transformer or to the centre-tap end of the 150 ohms biassing resistor. If wet electrolytics are used, the first must be insulated from the chassis or the biassing resistors will be shorted out. The latter may be a wire-wound type or may consist of two 300 ohms one-watt resistors connected in parallel.

CONSTRUCTION.

Construction of the receiver is straightforward and simple, owing to the small number of components. The best plan is to wire the filaments first, and the connections to the power transformer, rectifier, electrolytic condensers, and speaker plug. A convenient ground system of heavy wire or stranded aerial wire connecting to the earth terminal should also be installed before commencing the wiring of the receiver proper. From then on it is simply a matter of soldering the smaller components in place, bearing in mind the fundamental rules of keeping leads short and direct as far as possible, and shielding the audio leads to and from the volume control.

Resistors and condensers should be soldered directly to the appropriate circuit points. For instance, the .1 mfds. condensers in the plate leads of the ECH35 and the EF39 should be connected close up to the I.F. transformers. The same considerations apply to the .1 mfds. condenser in the oscillator plate lead, the .0001 mfds. mica condenser in the oscillator grid lead, and to the .0005 mfds. by-pass in the diode circuit. Each of these should be soldered close up to the respective coils with which they are associated in the circuit diagram. The resistors in the oscillator grid circuit both solder right on to the oscillator grid terminal, the 50,000 ohms. grid-stopper in the grid circuit of the EBL31 being similarly positioned, with the 1 megohm grid-leak in close proximity. The 2 megohms resistor in the A.V.C. line should also be connected close up to the second I.F. transformer. If the principle outlined is followed with every component there will be no difficulties with instability and less trouble with alignment. Keep the job neat and tidy, and if wires have to cross, cross them at right angles, using spaghetti to cover longish leads.




ALIGNMENT.

If good coils are used there should be no difficulty in aligning the receiver. For perfect alignment, a modulated oscillator and output meter is needed as the ear is insensitive to small changes in volume. However, a fair job of alignment may be done with a non-ferrous screwdriver and some patience and care. For preference, the I.F. transformers should be peaked at the intermediate frequency by means of instruments after the receiver wiring is completed and before any adjustment is attempted.

The first step is to slacken off the padder one or two turns and tune in a weak high-frequency station below 1ZM if possible. The trimmers on the gang may then be adjusted for maximum signal. The position of the station may also be altered by adjustment of the padder if desired.

Now swing over to the low-frequency end of the dial and pick up 2YA or a weak station at a similar or lower frequency. Carefully adjust the padder for maximum signal while gently rocking the gang backwards and forwards. Do not touch the trimmers.

Tune back again to the selected high-frequency station and carefully adjust the aerial trimmer once more. By now the set should be fairly well in line.

When the receiver is working well and cannot be further improved, careful adjustment of the I.Fs. is in order. Commence with the secondary of the second I.F. and work back to the primary of the first I.F., peaking each circuit in turn for maximum signal.

This little receiver has been designed as a low-cost set to tune the main broadcast stations and, within its limits, will provide plenty of entertainment, as the R.F. gain is just as high as that of any standard five-valve super.

## "BROADCAST SUPER 4" PARTS LIST.

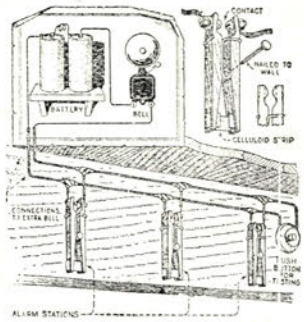
1 Chassis.
1 60 M.A. 6.3 volt Power Transformer.
1 Dial.
1 2-gang Variable Condenser.
1 each Type ECH35, EF39, EBL31 Philips Valves.
1 80 Valve.
5 Valve Sockets.
2 "Ensign" I.C. I.F. Transformers.
1 "Ensign" Aerial Coil.
1 "Ensign" Oscillator Coil.
1 ½ meg. Potentiometer.
1 Padder Condenser.
1 each 16 mfd., 8mfd. Tubular Electrolytic Condensers.
1 .0001 mfd. Mica Condenser.
1 .0005 mfd. Mica Condenser.
2 .01 mfd. Tubular Condensers.
1 .05 mfd. Tubular Condenser.
4 .1 mfd. Tubular Condensers.
1 .5 mfd. Tubular Condenser.
9 1 watt Carbon Resistors.
1 S.P.S.T. Toggle Switch.
1 Terminal Panel,
2 Knobs.
SUNDRIES: Hook-up Wire, Solder Lugs, Nuts and Bolts, Grid Caps, etc.

**Complete Kit of Parts (as above)**
Cat. No. TK2057 **£10/9/6**

**Speaker.**
Suitable Speaker:
"Rola" K8, 8in.
"Rola" 8" .. .. **£2/16/6**

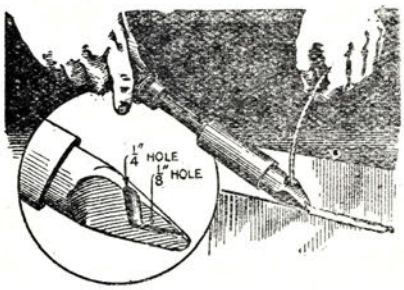
# Handy Hints and Kinks

## LOW COST FIRE-ALARM.




Although the cost of this Fire-Alarm system is negligible, it insures adequate protection.

## "SELF-FEEDING IRON"

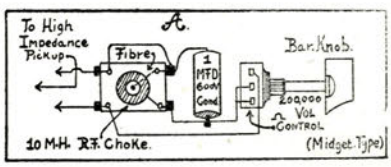


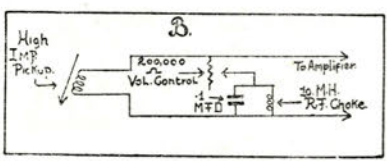

***Long seams in sheet metal are neatly and quickly soldered with this altered iron.***

One tinsmith I know who has many jobs which require soldering long seams, uses a self-feeding iron like the one shown above. He claims that the iron enables him to do neat jobs and save solder as it flows evenly over the seams. Wire solder is fed into the hole in the copper end where it is melted and flows out of the hole at the tip.

## SCRATCH FILTER

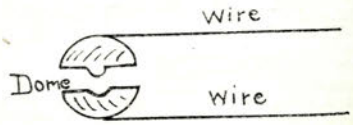
Scratch filter and volume control for use with any high impedance radio-gramophone pickup. This will eliminate scratch noises




usually present at approximately 5000 cycles, and surface noises from the record, such as needle scratch, etc. Simplified diagram A and schematic B show filter for about this frequency.

## BATTERY SNAP SWITCH.

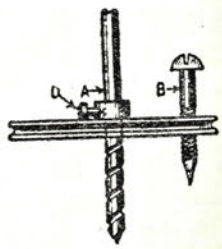



A dome fastener makes a good Switch or Connector if the dome parts are soldered to the wires which are to be connected.

## NOVEL CIRCLE CUTTER

An efficient circle cutter for light metal and wood can be made from a pulley from an old Atwater Kent radio. These pulleys were used to gang two or more variable condensers mounted on the panel.

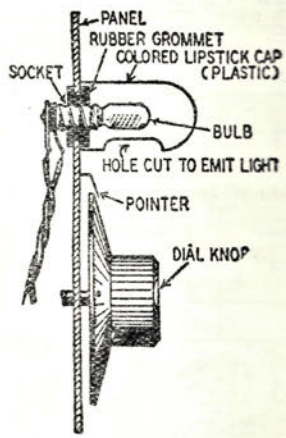
A ¼-inch twist drill is inserted in the centre hole and the set screws tightened to hold it in position. A small bolt, selected to make a tight




fit in one of the holes near the outer rim of the pulley, is ground to a triangular point for cutting. One nut is run up on the bolt before it is inserted in the hole and another is run up from the bottom to hold the bolt in place. The length of the bolt can be adjusted by changing the position of the two nuts. If a larger pulley is available, the bolt may be placed in holes drilled at different distances from the centre so that several sizes of holes may be drilled.—"Radiocraft."

## NOVEL PANEL LAMP

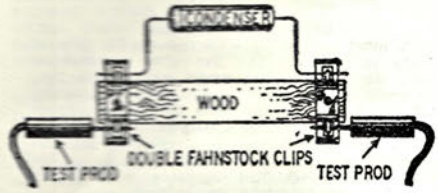
A very neat panel lamp for illuminating the dials on a receiver or transmitter may be made from the cap of a discarded plastic lipstick




tube. A hole is drilled in the panel to take a rubber grommet whose outside diameter is large enough to fit snugly into the open end of the lipstick cap. A hole or slot is cut in the cap so that it will cast a ray of light on the dial.

## SUBSTITUTION GADGET

A quick and easy way of testing various Radio components is shown below.

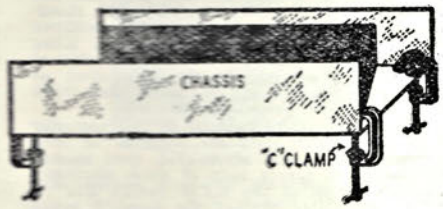



Solder a Fahnstock clip on each end of a piece of twisted light cord. Cut one of the wires shorter than the other so that the clips cannot touch. Tin the opposite ends to serve as test prods. Resistors, condensers, coils, etc. are fastened to the clips.

If you have test prods, double clips may be fastened to a 1 x 2-inch piece of bakelite, plastic or Masonite. The upper clips are used to connect to the spare parts, the lower ones connect to the test prods.

## CHASSIS SUPPORTS

When experimenting with or servicing small radio sets, unshielded coils and tubes are often damaged when the chassis is inverted on the

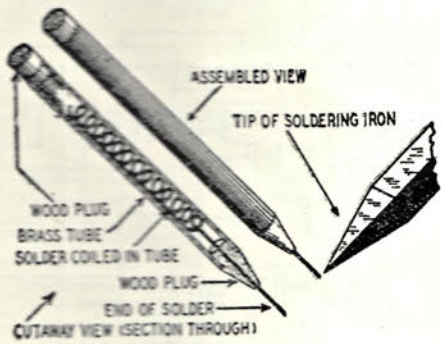



work bench. To prevent this trouble, mount a "C" clamp on each corner of the chassis. When the chassis is inverted, it rests on the screws of the clamps.—"Radiocraft."

## "SOLDER PENCIL"

Soft wire solder can be handled more conveniently and easily in the pencil-type holder shown.

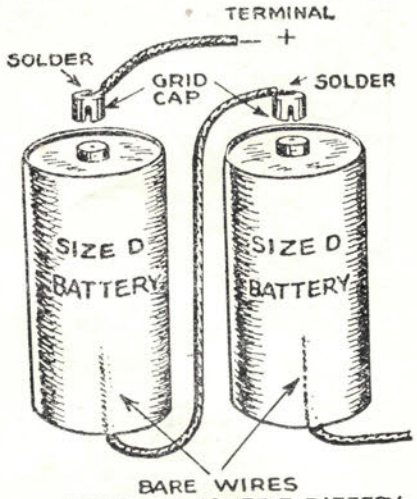
The barrel of the holder is a 6-inch length of ½- or ⅝-inch copper tubing. A tapered wooden dowel is wedged into one end of the




tube and drilled with a hole slightly larger than the diameter of the solder.

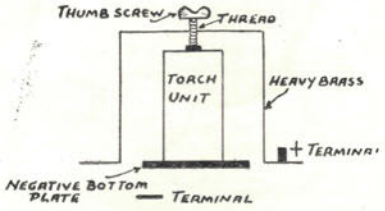
The solder is formed into a spring-like spiral by winding it around a pencil or small rod, leaving a short straight projection. The solder is loaded into the open end of the holder so that the projection will pass through the hole. When the pencil is used, the solder is pulled down as needed.

## QUICK BATTERY HOOKUP.



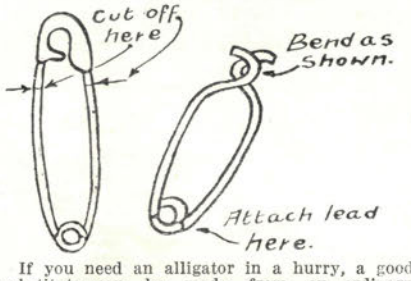

Many times one desires to use flashlight cells without having to solder wires to the terminals of the batteries. One can avoid this by using grid caps for the positive terminals and a bare wire slipped under the cardboard cover of the battery for the negative terminals.—"Radio-craft."

## BATTERY HOLDER



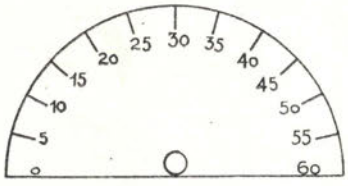

There are several ways of making battery holders for the "A" battery in a Hiker's One. In this diagram will be seen an excellent way of holding a torch unit in a small set by means of a thumbscrew.

## SAFETY PIN CLIP.



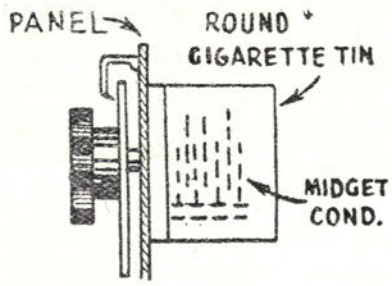

If you need an alligator in a hurry, a good substitute can be made from an ordinary safety pin. The head is removed and the ends bent as shown. The lead is secured to the opposite end by a small nut and bolt or solder.

## DIAL PLATES



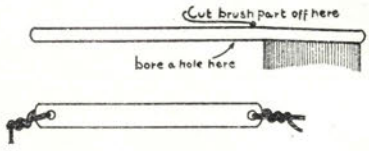

Removable plates of an old condenser may be used as a dial plate by carefully engraving them. With the aid of a sharp tool professional appearance is obtained. A pointer knob may be used to provide an excellent dial.

## HANDY CONDENSER SHIELD.



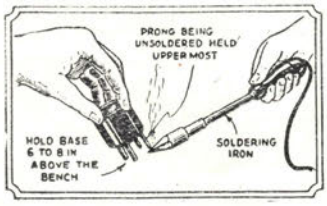

A round tin as used to pack 50 cigarettes is ideal for shielding midget condensers in short-wave receivers. Drill a hole in centre of lid large enough to admit condenser spindle. Fasten lid to panel by means of two small nuts and bolts. A small slot in tin will allow the lead from the fixed plates to pass through.

## AERIAL INSULATORS MADE FROM OLD TOOTH BRUSH HANDLES



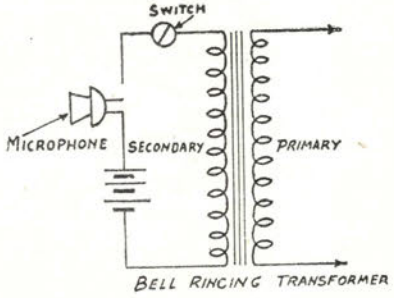

## "DE-SOLDERING" TUBE BASES

So many tube bases are being used for plug-in coils that I feel others should know of this time-saving wrinkle. You have undoubtedly noticed that no matter how long you heat the prong to "flow" the solder out, that a film of




solder is generally left over the hole by the cohesive force of the solder. Next time you have some tube bases to unsolder, try this: Hold the base, 6in. to 8in. above the bench, tilted, and with the prong being unsoldered uppermost, as shown. Melt solder with iron and then let the base drop on the bench so that it strikes on the lowest prong first. All solder will be removed, leaving a clear hole.

## SUBSTITUTE MIKE TRANSFORMER.




A bell ringing transformer can be pressed into service as a microphone transformer. The primary (240 volt winding) is connected to the amplifier, the secondary (6 or 8 volt winding) to the microphone.

## OSCILLATOR OPERATION

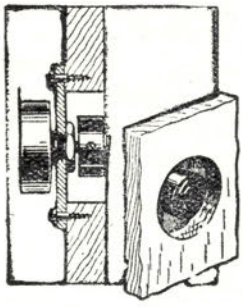
A simple test to ascertain if the oscillator in a superheterodyne is operating is to connect a high resistance voltmeter between the oscillator plate and earth. The oscillator tuning condenser should next be shorted, and if the oscillator stage is operating, the reading on the meter will change.

## SOLDERING TIP

The tip of a soldering iron may be kept bright by fastening a small suede shoe brush to the work bench so that the tip of the iron may be rubbed over the wire bristles of the brush each time it is used.

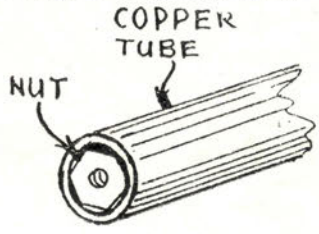
## KNOBS PROTECTED BY RECESSING

Flush knobs on a portable radio or phonograph case can be fitted by cutting suitably sized holes in a thick panel and mounting the controls on composition board sheets screwed on behind. Knobs in this position cannot interfere with the closing of tight-fitting covers.



G.O.S.

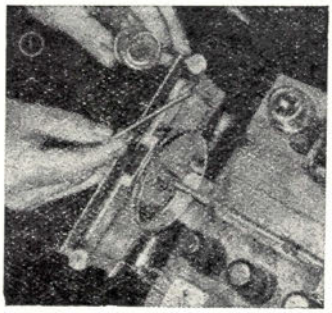
## HANDY BOX SPANNER




A handy box spanner can be made by taking a piece of copper or fibre tube and driving a nut into one end. The nut will cut a corresponding shape in the soft tube. To retrieve the nut simply screw a bolt into it and pull it out.

## SLIPPING DIALS.

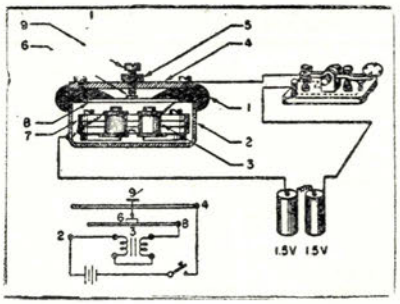
Slipping cord-driven dials are a common source of trouble in many receivers. This annoying defect shows up when your favourite station will no longer tune in at the usual dial setting, and turns up at some remote point. A simple remedy is to make up a small quantity of "belt dope," which consists of a saturated



solution of powdered resin in alcohol, and apply it to the full length of the cord with a small brush or cotton-tipped applicator as shown in photo. Readjust the dial to the proper frequency reading, and permit the cord to dry before doing any further tuning. Two or three such applications a year will prevent slipping in most cases.

## AN H-F BUZZER.

This buzzer produces an excellent high-frequency note and is not particularly difficult to construct. Any headphone unit will do, though a large one will be easier to work with.



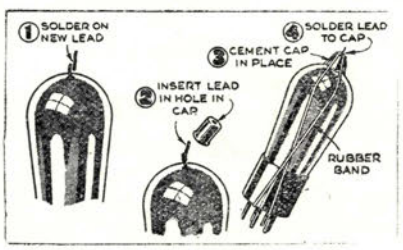

Details are given below:—

1. Telephone case cover (insulated).
2. Housing.
3. Telephone coils.
4. Brass plate (app. ½in.).
5. Fixing nut.
6. Silver contact.
7. Permanent magnet.
8. Diaphragm.
9. Adjusting screw.

The diagram tells the whole story. No further instructions are necessary.

## BROKEN-OFF GRID CAPS.

Broken-off grid caps can be replaced on glass tubes without impairment of service by the four steps as illustrated here. First, scrape clean the short wire lead protruding from the top of

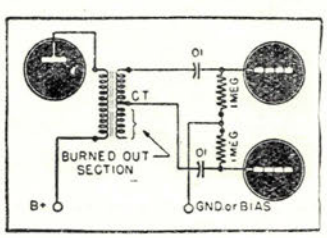



the tube and solder another short wire to it. Then insert the wire through a hole drilled in the cap. Next, cement the cap on, holding until the cement dries with rubber bands slipped over the cap and through the prongs. And, finally, solder the end of the wire lead to the grid cap. Solder quickly to keep from weakening the cement.—"Popular Mechanics.

## TRANSFORMER KINK

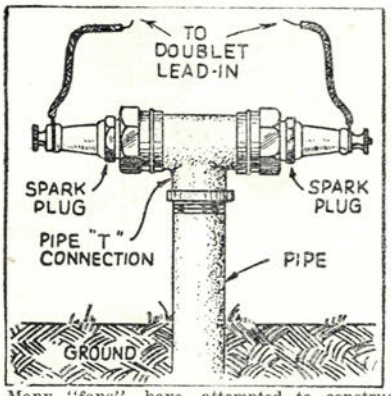
This kink may help someone who finds himself in the same position I did when one side of my push-pull transformer burned out. I rewired the circuit as per diagram, eliminating the burned-out section.

The transformer still furnishes 180 deg. out-of-phase signal to the output grids but at a lower voltage.



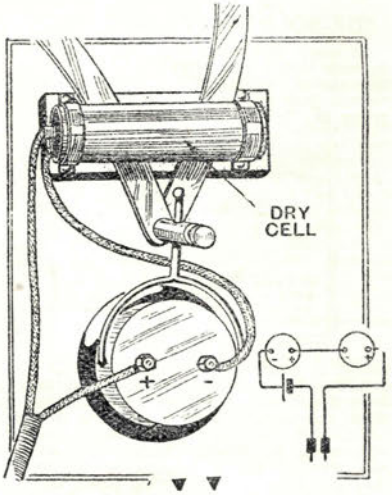

(Incidentally, this method could be employed to use any audio transformer for push-pull input. Voltage gain and grid impedance would be low, but as a makeshift the idea might be worth while.—Editor.)

## DOUBLET LIGHTNING ARRESTOR



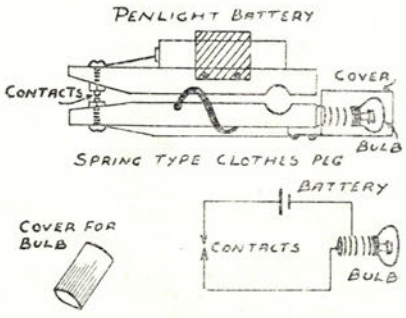

Many "fans" have attempted to construct their own "doublet" antenna lightning arrestors and have not been successful. Therefore I am passing along my idea, which has worked out very nicely. It consists of two discarded spark-plugs, which should be thoroughly cleaned, eliminating all traces of carbon and corrosion. These are then placed into the two ends of a "T" connection, which in turn is screwed into the ground pipe. In my particular case a ground pipe 5ft. long proved to be sufficient. However, the length of this pipe will depend upon the type of earth it is embedded in, and in some cases a pipe as long as 10 feet may be required.

## PORTABLE TESTING OUTFIT WITH DRY CELL ATTACHED TO HEADBANDS.

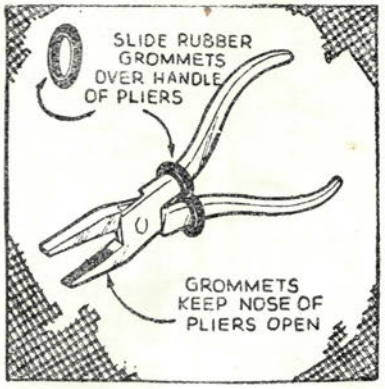



By fixing a dry cell to an old pair of 'phones and connecting as shown in the diagram, it is possible to walk about with the headphones in position and to carry out tests in any part of the room with the two free telephone tags.

## HANDY PIN-POINT SIGNALLING LAMP.




## A GREAT HELP

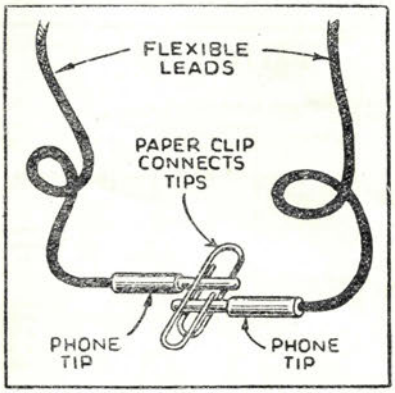



Many experimenters, hams and shop-workers who use pliers consistently will find that this kink speeds up work, as well as making it far easier. It keeps the pliers' jaws apart.

R. Johnson.

## JIFFY CONNECTOR.

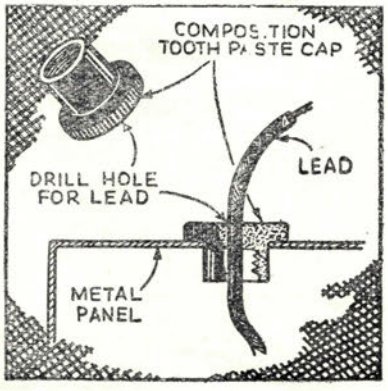
It seems that there are no end to uses for the "old faithful" paper clip. I found that it serves excellently as a connector where tem-




porary test connections are to be made. While the drawing shows two phone tips held together with a paper clip, almost any connection may be made in a similar manner. Flexible wires, of course, as well as solid wires, may be joined together without the trouble of twisting them.

## HOME-MADE BUSHING

The following is a method of running high-tension leads through a metal chassis. The insulators are the composition caps from tubes of tooth-paste and the like. My diagrams aren't wonderful, but I hope that they're understandable.



# THE "IMPROVED HIKER'S ONE" KITSET

**Still Tops the Poll as the most popular Kitset in New Zealand!**

A ONE-VALVE BATTERY RADIO THAT REALLY "PULLS" THE STATIONS.

**It's Easy to Construct — Cheap to Buy — and Economical to Run!**

**The ideal little Radio for a "boy's" room.**

***Build it Yourself!***

An Illustrated Leaflet with diagrams and Constructional Details is supplied with each kit sold by **'The Lamphouse.'**

Uses a modern 1C5GT or 1Q5GT General Purpose Valve and operates from a 9-volt "C" Battery and a No. 6 Dry Cell.

Both the batteries will stand up to many months of reasonable use.

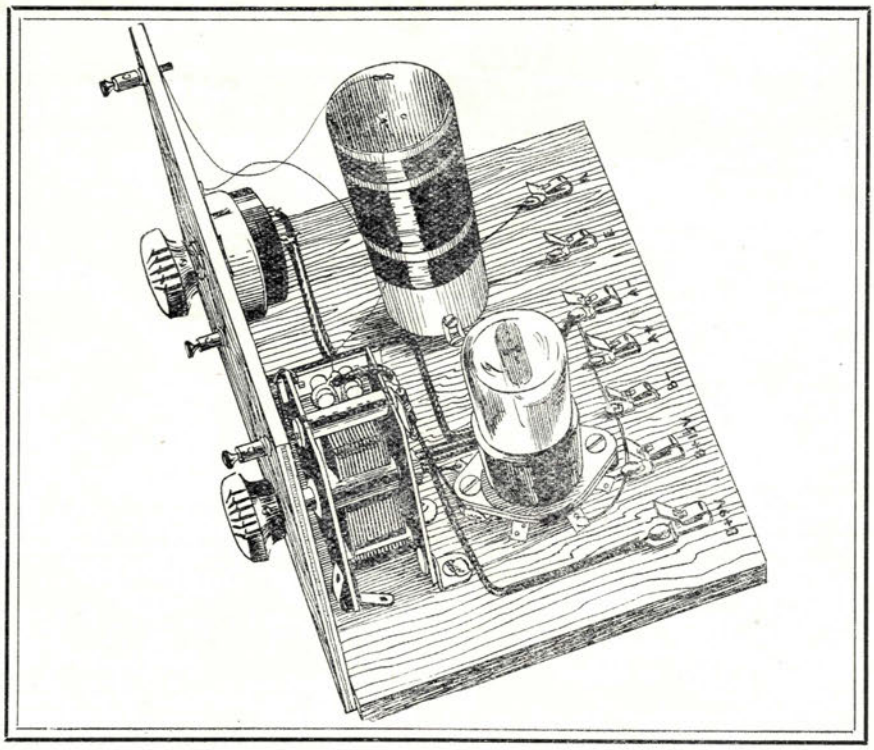
**Look what a few constructors say about it!**

"Some six years ago I obtained from your firm parts for an Improved Hiker's Set which I made up. That set gave me wonderful service for 3 years at least—when I gave it away it was still in tip-top order, and as far as I know is still good. Well sir, I would like you to send me a price list of parts for your latest Hiker's which I wish to purchase and make another.—J.R., Blenheim.

WRITE FOR **FREE** ILLUSTRATED LEAFLET.

"The 'Hiker's One' set which I purchased from you is going very well. The stations which I have received are as follows: 1YA, 2YA, 3YA, 4YA, 3ZB, 2ZB, 1ZB, 2YC, 2YH, 3YL, 2YB, 2YD, 4YZ, 1YX, 2FC, 2ZH. And fourteen other Australian stations.

"I am very pleased with its performance.—D.J.E., North Canterbury."



NELSON.

"Incidentally, the Hiker's One which I purchased from you in January for a friend is now going great guns, and he is well satisfied with it."—K.M.

☆ ☆ ☆

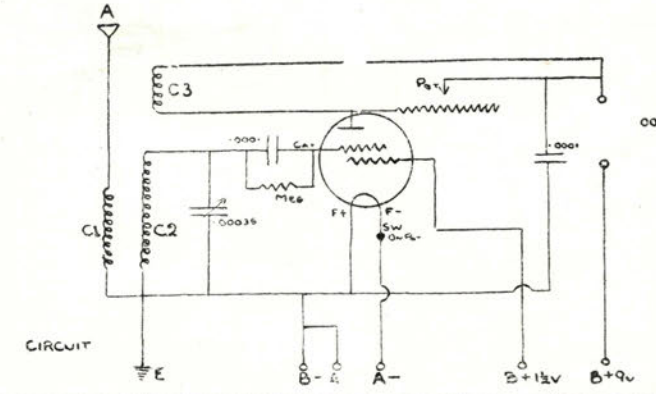
RANGIPO, National Park.

"I have to acknowledge receipt of the Hiker's One Radio Set recently sent to me, and desire to thank you for the prompt manner of delivery. The set has been giving excellent results, considering the distance I am from main stations, the best reception being received from 1ZM Auckland and 3ZB Christchurch."—(Sgd.) D.B.L.

DUNEDIN, N.W.1.

"I built the 'Hiker's One' over the week-end from the instructions in the Catalogue and obtained wonderful results, getting all the main N.Z. and Australian stations."—A.T.S.

**"THE IMPROVED HIKER'S ONE" was introduced to New Zealand by "THE LAMPHOUSE"**



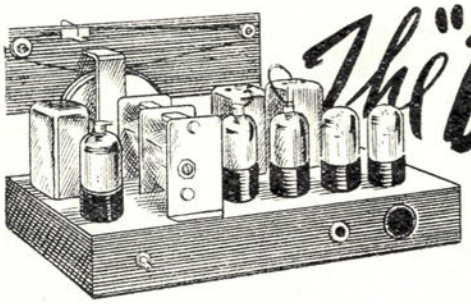

## Parts List

2 .0001 mfd. Mica Condensers
1 1 meg. Resistor
1 Variable Single Gang Condenser, .00035 or .0005 mfd.
1 500,000 Potentiometer with Switch
9 Fahnstock Clips or Terminals
1 Valve, 49, 1Q5GT, 1C5GT
1 Valve Socket
1 1¼in. x 3¼in. Coil Former
1oz. 32 gauge Enamelled Wire
2 Coil Feet
14 Wood Screws
2 Nuts and Bolts
1 Coil Pushback Wire
1 Baseboard
1 Panel
2 Knobs
1 1½v. Dry Cell
1 9v. C. Battery

**COMPLETE KIT OF PARTS WITH OCTAL TUBE AND BATTERIES— £2/11/6**

Cat. No. TK2004

MAIL YOUR ORDER NOW TO THE ELECTRIC LAMPHOUSE
11 MANNERS ST., WELLINGTON



# The "DEFIANT 5" BATTERY RECEIVER

*"THE DEFIANT" is an up-to-date 5-valve Battery-operated Receiver using all 1.4 volt, low drain Valves. The Circuit is straightforward and contains no frills.*

*With the addition of a loop aerial "THE DEFIANT" could be easily transformed to a good quality Portable.*

CONSTRUCTORS will find this receiver exceptionally light on batteries, due principally to the 1.4v. tubes employed. The circuit is conventional in general, and is a proved performer. The output tube is a comparative newcomer and gives an excellent account in this circuit, as constructors will readily agree. Tonal quality and fidelity are remarkable for a receiver of this nature using a 5in. or 8in. P.M. Speaker well baffled.

Iron Core I.F. Transformers should be used if best results are to be had from the circuit. In spite of the fact that the set performs well, there are no "snags" in construction, and providing due care is taken in wiring and lining up, results will leave nothing to be desired.

### MOUNTING THE COMPONENTS

The chassis is supplied ready drilled to receive components, leaving the constructor the simple operation of bolting components to chassis. The valve sockets should be mounted firstly, followed by the gang condenser, I.F. Transformers, aerial and oscillator coils, volume control and padder. Note that the dial is not mounted at present, as it proves cumbersome when wiring up the chassis.

### WIRING DETAILS

All the filaments should be wired first. Pins 2 and 7 on each tube are the filament connections. Pin 7 should be earthed to chassis in each case and pin 2 goes to A+. Individual tube connections are as follows:—

**1A7GT—**
**Pins 2 and 7** = Filaments.
**Pin 3 Plate,** wired to top of primary of first I.F.
**Pin 4, Screen,** to 50,000 Ohm Resistor bypassed by .1 condenser to earth.
**Pin 5, Osc. grid** to .00005 condenser. Also through 200,000 resistor to chassis.
**Pin 6, Osc. Plate** to primary of osc. coil. The top cap of the tube (grid clip) is connected to the fixed plates of the first section of the gang condenser, which also connects to the aerial coil secondary. The second section of the gang connects to the grid winding of the oscillator coil and the .00005 mfd. condenser referred to previously. The bottom end of the grid winding connects through the padder to the moving plates of the gang section and earth.

**1N5GT TUBE** (No. 1).
**Pins 2 and 7** = Filaments.
**Pin 3** = Plate—To second I.F. Transformer.
**Pin 4** = Screen—to B + 90v.
**Top Cap** = Grid—To lead through top of I.F. Transformer No. 1.

**1N5GT TUBE (No. 2).**
**Pins 2 and 7** = Filaments.
**Pin 3** = Plate—To .0001 condenser and 30,000 ohm resistor.
**Pin 4** = Screen—To B + 90v.
**Top Cap.** Grid—To top of secondary of second I.F. transformer. Bottom of this winding is earthed.

**1H5G TUBE.**
**Pins 2 and 7** = Filaments.
**Pin 3** = Plate—Through .0001 condenser to earth. Also through .005 condenser to 1Q5GT grid. Junction of .0001 and .005 through 1 meg. resistor to B+.
**Pin 5** = Diode plate—Through .0001 condenser to Pin 3 on second 1N5GT tube.
**Top Cap.** Grid—Through 5 meg. resistor to earth. Also through .005 condenser to centre terminal on potentiometer.

**1Q5GT TUBE:**
**Pins 2 and 7** = Filaments.
**Pin 3** = Plate. Wire .05 condenser to one outside lug on 10,000 ohm potentiometer. Con-

## PARTS LIST FOR THE "DEFIANT" 5-TUBE, 1.4 VOLT RECEIVER.

1 Chassis
1 Dial
1 1A7GT Valve.
1 1H5GT Valve.
1 1Q5GT Valve.
2 1N5GT Valves.
6 Valve Sockets.
2 I.F. Transformers.
1 Aerial Coil (Shielded).
1 Oscillator Coil (Shielded).
1 2-gang Variable Condenser.
9 Resistors.
1 .00005 mfd. Mica Condensers.
3 .0001 mfd. Mica Condensers.
2 .005 mfd. Tubular Condensers.
1 .01 mfd. Tubular Condenser.
3 .05 mfd. Tubular Condensers.
1 .1 mfd. Tubular Condenser.
1 .5 mfd. Tubular Condenser.
1 Padder Condenser.
1 500,000 ohm Potentiometer.
1 10,000 ohm Potentiometer W/W.
1 S.P.S.T. Toggle Switch.
3 Knobs.
1 yard Battery Cable.

SUNDRIES: Hook-up Wire, Nuts and Bolts, Solder Lugs, Grid Clips.

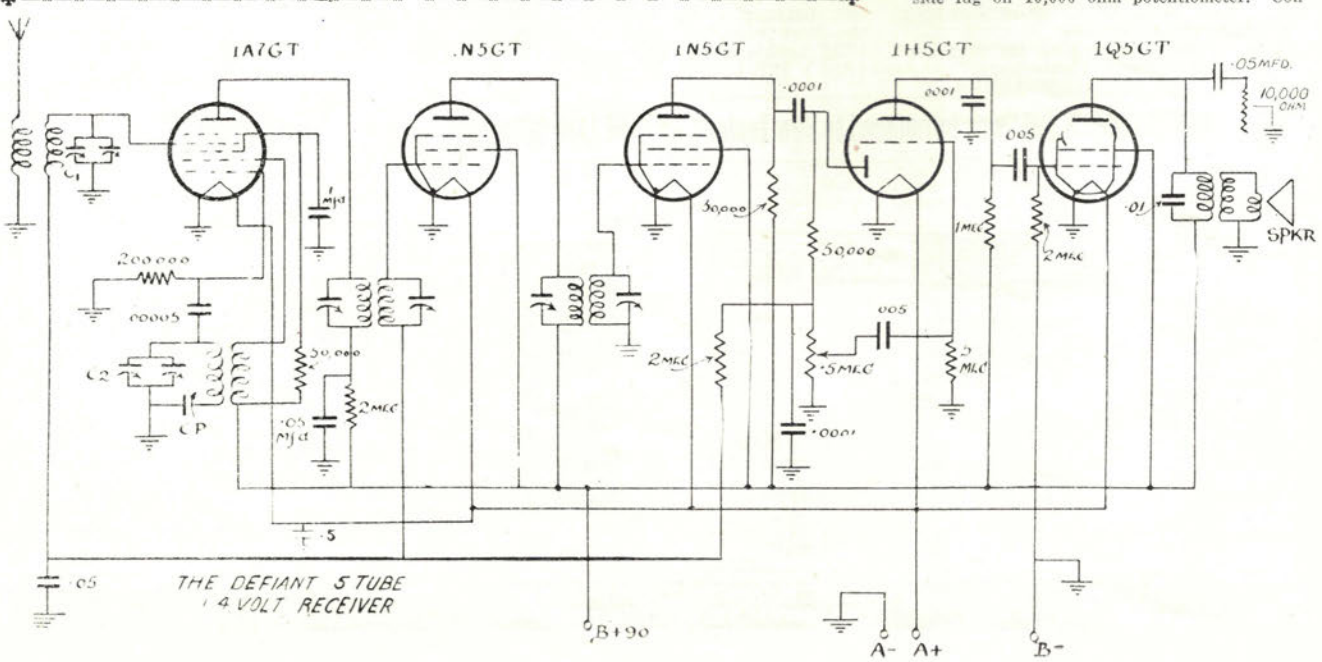
**COMPLETE KIT OF PARTS, as listed.**
**Cat. No. TK2039** **£10/10/6**
(without Speaker)

WITH BATTERIES.
2 45v. Portable Batteries.
1 1½v. A Battery.
**Cat. No. TK2039A** .. (Without Speaker.) **£12/10/-**

## SUITABLE SPEAKERS

Cat. No. TS958 "Rola" 8K. 8in. Speaker with Transformer— **£2/4/10**

Cat. No. TS946—"Philips" 8½in. Speaker, with TT603 without Transformer— **£2/5/6**



nect centre contact on this potentiometer to earth. To primary of Speaker Transformer and .01 condenser across winding.

**Pin 5** = Grid—Through .005 condenser to pin 3 on 1H5GT tube .2 meg. resistor wired from this terminal to B— and earth.

**Pin 4** = Screen—To other side of Speaker transformer primary and B + 90v.

I.F. Colour Code is supplied with the kit. Connections not mentioned in the above tube wiring are as follows:—

Other end of aerial coil secondary goes through .05 condenser to earth. Wire .5 mfd. condenser from A + to earth. Connect 2 meg. resistor from bottom of primary winding of 1st I.F. to B + 90 and bypass to earth through .05 condenser.

B + 90 v. should be wired to the following points:—

(1) Bottom end of oscillator coil primary.
(2) Through 2 meg. resistor to bottom of 1st I.F. primary.
(3) To pin No. 4 on both 1N5GT tubes.
(4) To primary of 2nd I.F.
(5) Through 1 meg. resistor to Pin 3 on 1N5GT tube.
(6) Through 1 meg. Resistor to Pin 3 on 1H5GT tube.
(7) To pin 4 on 1Q5GT tube.
(8) To one side of the speaker transformer primary.

From pin 5 on 1H5GT wire 50,000 resistor to one outside terminal on .5 meg. potentiometer.

Connect a .0001 condenser from this pot. contact to earth. From this same terminal now wire a 2 meg. resistor to bottom of 1st I.F. secondary and also to one end of the aerial coil secondary connecting to earth through .5 condenser. The remaining outside lug on the pot. is earthed. This should complete the wiring.

Battery connections should now be made as indicated, extreme care being needed not to exceed the 1½v. filament rating on the tubes!

The alignment is simply a matter of tuning in a station at the high frequency end of the dial (plates open), adjusting the trimmers on the gang for maximum signal. Then tune in a station at the other end of the band and adjust padder for best results. When wiring up the circuit the novice will find it a distinct advantage to mark off leads on the diagram as they are wired up in the Receiver.

# A Volt-Ohmmeter Without Switches

("Radiocraft")

WITH the price of good test equipment what it is today, the part-time radio serviceman may find it better to have a home-made tester than no tester at all.

This volt-ohmmeter was constructed with parts obtained mainly from the junk-box (may it always be overflowing). The case was originally a cheese box that was taken apart very carefully so as not to split the wood. It was then cut to the desired size, nailed and glued together, the brand-name markings being left on the inside, and given a good sandpapering. It was then given a coat of dark mahogany stain. The outside dimensions of the case are: Length, 5 inches; height, 2¾ inches; width, 3½ inches.

It is also advisable to drive in 4 rubber-headed nails at the bottom corners of the case to prevent it from marring a customer's radio cabinet, when checking a radio in his home. They also give the tester a more professional appearance.

Wiring this tester should not be difficult, but as a precaution, before testing any source of voltage, make certain that all the connections are wired correctly, otherwise you might possibly burn out the meter. Fig. 1 is self-explanatory.

The range selector switch is nothing more than an octal-wafer tube socket that was placed under the top panel and in which ⅛-inch holes were drilled to match the holes of the octal socket. To select the range all you have to do is to plug one of the test leads into the desired hole of the tube socket.

PARTS LIST

1 0-1 ma. Meter with Universal Scale.
1 16 mfd Electrolytic Condenser.
1 .05 mfd Tubular Condenser.
1 .01 mfd Tubular Condenser.
1 1000 ohm Wirewound Control.
5 Carbon Resistors.
1 Octal Valve Socket.
3 Penlite Battery Cells.
1 Pointer Knob.
1 Amphenol Single Jack and Plug.
SUNDRIES: Hook-up Wire, Nuts and Bolts, etc.

**Complete Kit of Parts as above. Cat. No. TK2045 .. £4/10/-**

The meter is 3-inch size, 1,000 ohms per volt, 0-1 ma. The original scale was not suitable for a volt-ohmmeter, so a meter scale of the type shown was obtained and glued on top of the original one.

The zero-ohms adjuster is a 1,000-ohm wirewound control, salvaged from an old discarded tester. The ohmmeter range is 0-300,000 ohms. The d.c. voltage ranges are 0-15/150/300/1,500 volts. The resistors used to construct this tester should be as accurate as can be obtained; they should be rated ½ to 1 watt. The insulated type is preferable, to prevent the possibility of a short circuit.

Besides being used as a volt-ohmmeter, this tester has at least one other function—3 condensers are placed inside the case with one end of each terminating at the range selector switch. The built-in condensers are a considerable time saver. Instead of having to hunt for a condenser to jump the suspected defective one, you will always have the most popular sizes right in your tester.

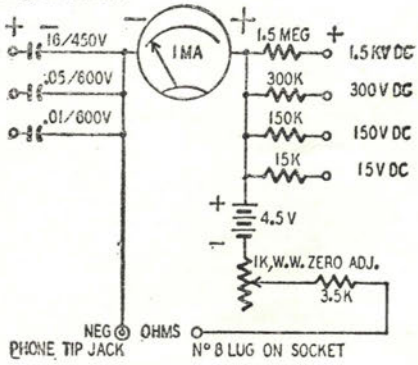



Fig. 1—Circuit includes 3 test condensers.

The capacitance sizes were chosen very carefully to get the most efficiency from the smallest number of condensers in the case. There is a 16-mfd, 450-v, tubular condenser that can be utilised to jump across almost any filter condenser you may suspect to be open. There is also a 0.05-mfd, 600-v condenser that can be used as a substitute for a by-pass, line, a.v.c., blocking, coupling, or audio decoupling condenser. Finally, there is a 0.01-mfd, 600-v. condenser that can be used as a substitute for a coupling or plate condenser. If condensers are not needed, the points can be used for other test purposes.

The various range settings on the tube socket are arranged as shown in Fig. 2. The negative tipjack test lead does not have to be removed for any range you may wish to select. This adds to the convenience of operating the tester. This system is cheaper and more compact than using a switch, and is far quicker to wire up when constructing the meter. It is also safer to use than a switch type, as there is less danger of putting the pin in a wrong jack than there is of turning the more-easily-moved switch to a wrong point.

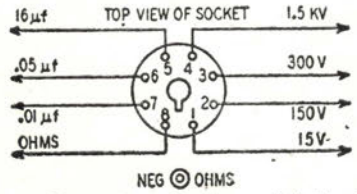
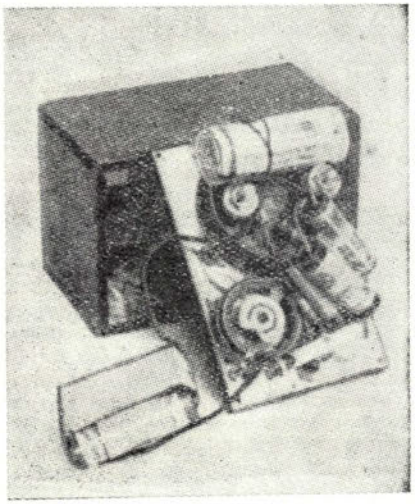



Fig. 2—Connections to the socket terminal

The batteries are the Pen-lite type, which will probably last much longer than a year with normal usage.

This tester, because of its simplicity and low construction cost, should prove highly useful to many newcomers in radio. Even old-time radio servicemen who don't want their good test equipment subjected to unnecessary abuse might find it useful as a pocket-sized portable meter for their outside service calls, as it enables them to have both hands free to carry a radio chassis. It may also be used in the repair shop as a spare test meter.

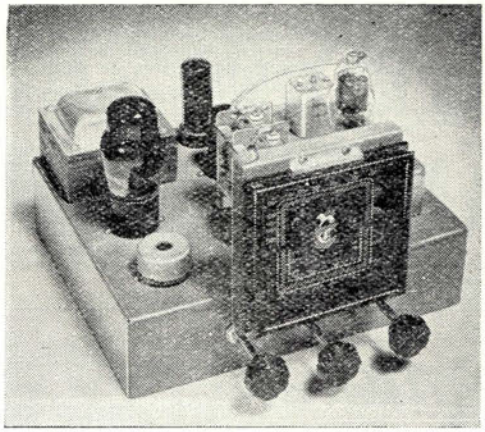


An Interior View showing the extra Condensers.

MAIL YOUR ORDER NOW TO THE ELECTRIC LAMPHOUSE
11 MANNERS ST., WELLINGTON

# THE "SKYHAWK FOUR"

(Reprinted from the "AUSTRALASIAN RADIO WORLD")



FOUR valves in a simple t.r.f. circuit, with reaction, make this set a great little performer that is at the same time simple and cheap to build.

A 6K7 r.f. pentode provides plenty of gain, which is built up still further by the regenerative leaky-grid detector, long recognised by set builders the world over as the easiest and cheapest way of getting maximum sensitivity from a minimum number of valves.

### GOOD SENSITIVITY AND SELECTIVITY

Not only sensitivity, but selectivity, too, is improved enormously by reaction. With it, local stations that spread over a great portion of the dial without it can be confined to a few degrees. The tuned r.f. stage helps considerably in this respect, too, while still better results can be obtained by those living in city areas if a short aerial is used.

If the set is to be used for local work only, then even in the suburban areas there is plenty of selectivity to ensure complete separation of the locals.

As regards sensitivity, a few feet of wire for an aerial will give far more volume from nearby stations than would be needed for any home. In good locations there will be no difficulty in bringing in all the main New Zealand stations at fine speaker volume, providing an efficient aerial and earth system is used.

Tone is natural, and a well-baffled speaker of good make will give reproduction that is crisp and clear, equal to that obtained from many sets costing several times as much.

### THE COILS

A standard aerial coil, and an r.f. type with reaction, are required, together with a 2-gang condenser of approximately .00035 mfd. capacity per section for tuning purposes.

To ensure a good margin of safety, the 450-ohm bias resistor for the 6F6 should be rated to carry 100 mils. Though theoretically a 1-watt carbon resistor should be quite satisfactory, it is exceedingly risky to run any type of resistor according to its rated dissipation. A 100 per cent. margin of safety for the lower ratings, at least, should always be allowed.

### MAKING A START

When the parts have all been obtained, a start can be made by mounting the power transformer, valve and speaker sockets, coils, condenser gang, volume control potentiometer, reaction condenser, aerial and earth terminals, voltage divider, and power cable grommet.

As there are many types of power transformers on the market, the terminal arrangement on the panel has not been shown on the wiring sketch.

The heater wiring should be put in first of all. To do this, solder a lead to each of the "6.3-volt, 2 amp." terminals on the power transformer panel, and take them to the terminals 2 and 7 of the 6F6 socket. Repeat the process, but take the second pair of leads to the same terminals on the 6C5 socket. Next, run a final pair of leads between terminals 2 and 7 on the 6C5 and 6K7 sockets.

To avoid the risk of introducing hum, these leads should either be twisted or run side by side, close together.

Now the rectifier can be wired up. To do this, run a pair of leads from the "5-volt 2 amp." terminals on the power transformer panel to terminals 2 and 8 on the 5Z4 socket, and another pair from the "385v. 60 m.a." terminals to terminals 4 and 6. Both "C.T." terminals on the power transformer panel should be connected together and earthed to a soldering lug held down by the nut on a convenient mounting bolt.

The four leads to the rectifier should be bunched together and kept towards the back wall of the chassis.

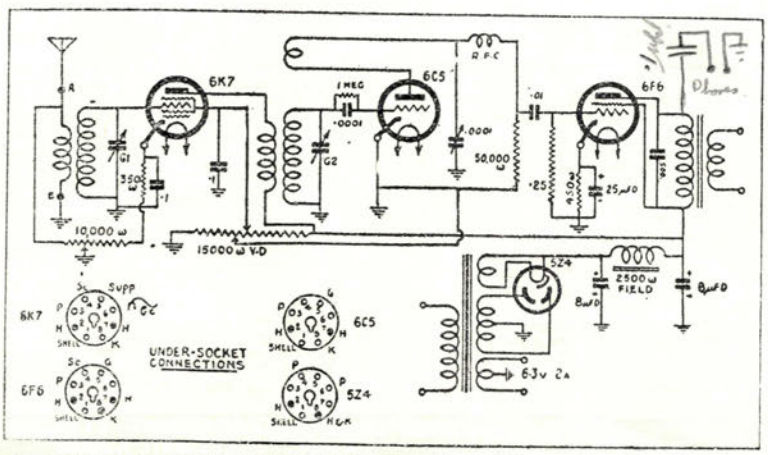
The remainder of the wiring can now be put in as shown on the wiring diagram. All valve socket connections are clearly shown on the circuit diagram, the pins being numbered correspondingly on both diagrams.

Starting from the aerial terminal, wire up the aerial coil, then the 6K7, then the detector coil, and so on until the wiring is complete. The lugs on the coils supplied will be either colour-coded or numbered, and the connections will be indicated on a slip of paper accompanying each coil.

When the detector socket is being wired up, keep the grid condenser and leak, as well as the grid lead, as far as possible from the rectifier leads, to avoid introducing any hum pick-up from the latter. If necessary, a small metal shield measuring about 2 inches long by 1½ inches high can be mounted between the two sockets to eliminate this risk entirely.

The polarity of the three dry electrolytics should be carefully watched. In the case of the two 8 mfd. types, the end painted red or marked positive should be connected to "B+", and in the case of the 25 mfd. condenser, this end should be connected to the 6F6 cathode.

When the wiring has been completed and checked, the power cable can be wired in—black lead to "C" on the power transformer panel, red to "220v., 240v., or 260v.," depending on the voltage of the supply mains, and, if a 3-pin plug is used, white or any other colour, to chassis.




The circuit of the "Sky-Hawk," together with under-socket connections for all valves.

### MOUNTING THE DIAL

Lastly, the dial can be mounted and the dial lights wired up. To do this, run a pair of twisted leads from the heater lugs of the 6F6 socket to the lugs of the dial light sockets. A pair of leads is then run between the lugs on the two dial light sockets, and the wiring is complete.

### READY FOR OPERATION

Take a final run over all connections, and then plug in the valves and speaker, and connect up the aerial and earth leads.

Invert the chassis and turn on the power, and at the same time watch and listen closely for any signs of sparking or power transformer overload. If a faint bubbling is heard from the transformer, for example, switch off immediately, as there is something radically wrong somewhere.

If everything seems O.K., however, and a faint hum is heard when an ear is placed close to the speaker, the volume control can be advanced and the tuning dial slowly rotated. A station should soon be picked up.

To align the receiver, set the two trimmers on top of the gang about half-way out, and tune in a station near the middle of the band —preferably one that requires a fair amount of reaction to bring it up to quiet room volume. Then adjust the trimmer on aerial section of the gang until volume is loudest.

### UNIT SHOULD NOT OSCILLATE

When the unit is switched in or out of circuit, it may be necessary with some receivers to make a slight adjustment to the main tuning control.

It will be found that the booster operates best, giving greatest gain and selectivity, with the regeneration control set just below the oscillation point.


**"SKY HAWK FOUR" PARTS LIST**

1 Chassis
1 Dial
1 .0001 mfd Midget Condenser
1 2-gang Variable Condenser
1 Aerial and R.F. Coil
1 each Type 6K7, 6C5, 6F6, 5Z4 Valves.
5 Wafer Valve Sockets
1 60 M.A. 6.3 Volt Power Transformer
1 10,000 ohm Wire Wound Potentiometer
1 R.F. Choke
2 8 mfd Electrolytic Condensers
1 25 mfd Electrolytic Condenser
5 Fixed Condensers
1 15,000 ohm Voltage Divider
5 Resistors
SUNDRIES: Hook-up Wire, Tip Jack, Grid Clips, Knobs, Solder Lugs, Nuts and Bolts. etc.

**Complete Kit of Parts as above— £9/7/6**

Cat. No. TK2054 ..

KITS for Radio TRAINING


# AERIAL AND EARTH SYSTEMS

By "Starlite"

THE early pioneers of radio were once faced by a very serious problem. Their crude attempts at transmission were being held up as the range achieved was extremely limited. Someone got the bright idea of suspending a piece of wire in the air. Thus the aerial was born. The earth was the logical conclusion. Radio transmission and reception experiments increased in efficiency.

The same holds good today.

Too many people are satisfied that their modern receiver rolls 'em in with "only a bit of wire dangling down behind the cabinet, y'know!" It would pay them to consider just how much their reception would be improved with a decent aerial and earth attached to the appropriate terminals so thoughtfully supplied by the manufacturer. The manufacturer did not supply aerial and earth connections just to be in the fashion. They are there simply because a good aerial and earth system is necessary to any set, with the exception of portable receivers which are designed and so fitted to operate with their own built-in loop aerial.

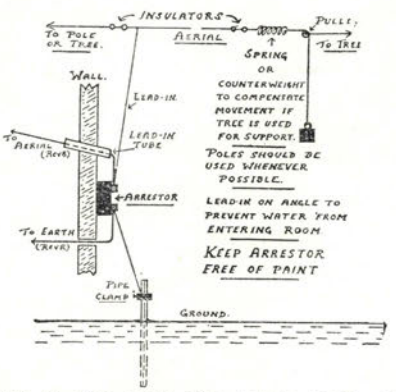
A satisfactory general-purpose aerial consists of a hundred foot coil of wire . . . single or multi-strand, pure or tinned copper, covered or uncovered . . . three or four insulators, a lead-in tube, a lightning arrestor and an earth clamp. The installer uses sufficient wire from the coil to run from the earthing point proper to the appropriate terminal on the receiver. The balance of the wire, usually approximately 80ft. in length, is used for the aerial. The sketch shows a conventional L type aerial suspended between two supports. The average height of the supports should be about 30ft. The connections are shown pictorially.

A water-pipe, provided it makes an early entry into the ground, makes quite a good earth, but if the plumbing system wanders for a few hundred yards around underneath the house, then scrap this idea. Obtain 6ft of pipe, drive it into the ground at the handiest point, leaving a few inches protruding above ground-level, attach the clamp and wire, connect the free end to the set and there you are. Water poured into the pipe in dry weather moistens the adjacent ground thus making a better earthing contact. Any earth wire is NOT insulated. Any lead-in wire is ALWAYS insulated.

If you have an old copper or car radiator handy, these two articles make good earths. Either article is as good as the other, but the radiator has certain advantages. Its filler cap can be left above ground for easy filling. Holes punctured in the body allow the water to seep into the surrounding ground. With a buried copper, the bowl is placed into a hole after a few holes have been pierced in its body and the object is covered with earth. When the copper is half covered, a piece of spouting is placed vertically over the centre of the copper and the filling-in completed. Water is poured down the spouting in dry weather, with the same effect as in the case of the car radiator. Don't forget to solder your earth wire to the object before burial.

Theoretically, an earth should be as long as the aerial and buried directly below it along its length. Marconi transmission aerials are usually installed in this fashion, and, although it may seem a hard task, it is liable to pay dividends if you are interested in D.X. with small receivers.

If an L aerial does not lend itself to the geography of your home, then a T aerial can be erected. A T aerial describes itself. The lead-in takes off from the centre of the aerial proper. The L type has its lead-in running from one end. Any type of conventional aerial is directional to the point in which it runs from the lead-in end. Thus the T aerial is directional to two points 180 degrees apart. A doublet aerial is directional to a point broadside to its length.




Any aerial should be clear from obstructive elements such as trees, buildings or large metallic objects. I have never lived next door to a gasometer, but I should imagine that things, speaking from the purely radio point of view, would not be too pleasant.

As regards doublet aerials, there are many of these on the market, and are principally designed to reduce inter-actional noises, such as interference from commercial machinery or apparatus. The same applies to noise-reducing aerials which are designed to reduce unwanted noises which are introduced by a normal aerial system, the same as doublet aerials. Designers of doublet aerials usually have their eye on the improvement of short-wave reception as well as noise reduction, while other types of noise-reducing aerials follow a normal T or L type, but include, as in the case of doublet aerials, the usual R.F. transformers at the point of lead-in contact at the aerial proper and also at the receiver end. The T or L noise-reducing aerial, unless otherwise stated, is a general purpose aerial. The lead-in for a doublet aerial is twisted or transposed, while the lead-in for the other type is shielded metallically, and the shield grounded to a separate earth.

If a tree or trees support your aerial, one end should be sprung or counterweighted, so that the movement in a breeze is compensated in order that the wire does not snap.

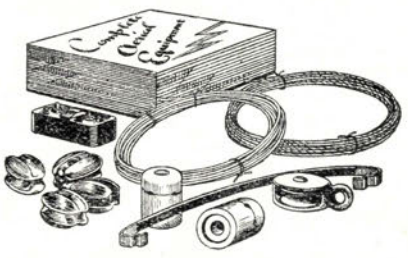
Periodically, your aerial should be lowered and carefully overhauled. The insulators should be washed with soapy water to remove the grime and any soldered joints critically examined. When erecting your aerial, try to eliminate soldered joints. The lead-in tube should be examined for cracks and other manifestations of deterioration. It should be replaced if it will not pass inspection. The same applies to the lightning arrestor. A faulty arrestor will cause no end of unwanted noise.

The earth should also receive the same careful examination, for a corroded connection at the clamp often causes you to think that there is a lot of static about.

Careful erection and subsequent attention to your aerial and earth pays dividends.

Never share an aerial with another listener.


**EVERYMAN'S AERIAL KIT**




**The "Everyman" Aerial Kit consists of standard equipment used in conjunction with all short-wave and broadcast receivers. Contains: 100ft. 7-strand Aerial Wire, 4 Egg Insulators, 1 1in. Pulley, 1 Lightning Arrestor, 1 Lead-in Strip, 20ft. Lead-in Wire, 2 Nail Knobs. Actual cost of components if purchased individually, 17/-.**

Cat. No. TA330 .. .. .. **14/11**

"LAMPHOUSE" RADIO BOOKLETS ARE INTERESTING AND INSTRUCTIVE
CIRCUIT BOOK 2/6 — INSTRUCTION COURSE 2/6 — DATA BOOK 3/6

# SHORT WAVE STATIONS OF THE WORLD

This list of short-wave stations contains those best received in New Zealand, and schedules are correct as to December, 1947. News bulletins referred to are in English, and times in N.Z.S.T. 12 hours ahead of GMT.

Compiled by Arthur T. Cushen, 212 Earn Street, Invercargill, to whom enquiries regarding unlisted stations, and other DX matters can be addressed. Fuller details, addresses and other questions will be answered promptly.

| Call and Location. | Freq. Kilo-cycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| YDB—Batavia, Java .. .. | 2240 | 300 | 10.30 a.m.-1.30 p.m., 3.30-6.30 p.m., 7.30 p.m.-3.30 a.m. |
| *TG3—Guatamala City, Guat. | 2320 | 300 | "Radio Morse." |
| ZQI—Kingston, Jamaica .. | 2330 | 200 | 12.30-3 p.m. |
| HOA—Panama City, Panama .. | 2340 | 300 | "La Voz de la Democracia." |
| WLKS—Kure, Japan .. .. | 2460 | 1,000 | 8 p.m.-1.30 a.m. |
| WWV—Washington, D.C. .. | 2500 | 1,000 | Frequency check station. |
| YDH—Samarang, Java .. | 2510 | 60 | 11.30 p.m.-3 a.m. |
| JODK—Souel, Korea .. .. | 2510 | 3,000 | 10 p.m.-1.30 a.m. (Eng. on ½ hour). |
| YDD—Batavia, Java .. .. | 2600 | 200 | 10.30 a.m.-12.30 p.m., 4.30-7.15 p.m., 9.30 p.m.-4 a.m. |
| *GRC—London, England .. | 2880 | 50,000 | |
| YDA—Bandoeng, Java .. .. | 3024 | 5,000 | 11.30 a.m.-10 p.m., 4.30-7.15, 10 p.m.-3.30 a.m. |
| HDZ—Riobamba, Ecuador .. | 3228 | 250 | "La Voz del Chimborazo" |
| YDI—Sourabaya, Java .. | 3240 | 250 | 11 a.m.-1 p.m., 4.30-6.45 p.m., 9.30-3.30 a.m. |
| VUC2—Calcutta, India .. | 3305 | 10,000 | News, 1 a.m. |
| YV1RO—Trujillo, Venezuela | 3310 | 2,000 | "Radio Trujillo," 10 a.m.-2.30 p.m. |
| Near East Broadcasting Station, Jaffa .. .. .. .. | 3320 | 7,500 | Closes 9 a.m. |
| VUD3—Delhi, India .. .. | 3335 | 10,000 | News, 1 a.m. |
| *VUB2—Bombay, India .. | 3365 | 10,000 | |
| YV1RT—Maracaibo, Venezuela | 3370 | 1,000 | "La Voz de la Fe," 10.30 a.m.-3.30 p.m. |
| YV5RY—Caracas, Venezuela | 3380 | 2,000 | "Radio Continente," 10.30 p.m.-3.30 p.m. |
| YV4RK—Maracay, Venezuela | 3390 | 500 | "Radio Maracay," 11 a.m.-3.30 p.m. |
| "Radio SEAC"—Colombo, Ceylon | 3395 | 700 | 12.30 p.m.-5 a.m. |
| YV5RW—Caracas, Venezuela | 3400 | 1,100 | "Radio Tropical," 11 a.m.-3.30 p.m. |
| YV2RC—Merida, Venezuela | 3420 | 600 | "La Voz de la Sierra," to 3.30 p.m. |
| VUM2—Madras, India .. .. | 3435 | 10,000 | |
| YV1RU—Maracaibo, Venez. | 3440 | 1,000 | "Radio Maracaibo," to 2.30 p.m. |
| *Johannesburg, Sth. Africa .. | 3450 | 5,000 | |
| YV7RB—Cumana, Venezuela | 3450 | 500 | "Radio Sucre," 9.30 a.m.-2.30 p.m. |
| YV4RP—Valencia, Venezuela | 3460 | 1,000 | "Radio Valencia," 1-3.30 p.m. |
| JO9H—Kawaguchi, Japan (JOAK1) | 3475 | 300 | 7.55-11 a.m., 8-2 a.m. |
| YV4RQ—Puerto, Cabello, Ven. | 3480 | 900 | "Radio Puerto Cabello," to 2.20 p.m. |
| CR7AB—Lourenco Marques, Mozambique | 3490 | 600 | 4-10 a.m., Mon. 3-10 a.m. |
| CR7IC—Beira, Portuguese East Africa .. .. | 3495 | — | 7-9 p.m., 10.45-11.45 p.m. |
| YV3RS—Barquisimeto, Ven. | 3490 | 4,000 | "Radiodifusora Occidental." |
| VUD2—Delhi, India .. .. | 3495 | 10,000 | News, 1 a.m. |
| YV5RX—Caracas, Ven. .. | 3500 | 1,500 | "La Voz de la Patria," 2.30 p.m. |
| YV6RC—Barcelona, Ven. .. | 3510 | 1,000 | "Emisoras Umidas," 11 a.m.-3.30 p.m. |
| YV5RS—Caracas, Venezuela | 3525 | 2,000 | "Radio Libertador," 10 a.m.-3.30 p.m. |
| YV5RD—Caracas, Venezuela | 3570 | 500 | "Radio Cultura," 3.30-6.30 a.m., 8.30-3.30 p.m. |
| ZEA—Salisbury, Sth. Rhodesia | 3658 | — | 5-8.30 p.m., Sun. to 8 a.m. |
| ZEB—Salisbury, Sth. Rhodesia | 3700 | — | In parallel with 3658. |
| *HCVT—Ambato, Ecuador .. | 3708 | 250 | "La Voz de Tungurahua." |
| HCQXR—Quito, Ecuador .. | 3710 | 300 | "Radio Quito." |
| ZQP—Lusaka, South. Rhodesia | 3725 | — | Sundays, 9-10.30 a.m. |
| HC1IM—Ibarra, Ecuador .. | 4020 | 300 | "La Voz de Imbabura," noon-3 p.m. |
| Ponta Delgada, Azores .. | 4040 | 1,000 | "Radio National." |
| HCJB—Quito, Ecuador .. .. | 4105 | 200 | "La Voz de los Andes," 11 a.m.-3.30 p.m. |
| HC1AV—Quito, Ecuador .. | 4090 | 30 | "La Voz de Victor." |
| HC1AO—Cuenca, Ecuador | 4200 | 200 | "La Voz de Tomebamba" |
| XMAG—Nanking, China (AFRS) | 4275 | 1,000 | 3 p.m.-3 a.m. |
| YDI2—Sourabaya, Java .. | 4370 | 300 | 10.30 p.m.-2.30 a.m. (Sun. 8.30 p.m.-2.30 a.m.) |
| JBBK—Pyong-Yang, Korea | 4400 | — | 8 p.m.-1 a.m. |
| HHCA—Port-au-Prince, Haiti | 4600 | 750 | 10 a.m.-2.30 p.m. |
| HC2AK—Guayaquil, Ecuador | 4650 | 1,000 | "Radio Ecuador," 11 a.m.-4.30 p.m. |
| *ZQI—Kingston, Jamaica .. | 4700 | 200 | |
| HC2ET—Guayaquil, Ecuador .. | 4720 | 300 | "Radio El Telegrafo," 10.30 a.m.-4.30 p.m. |
| YV1RV—Maracaibo, Ven. .. | 4750 | 300 | "Ecos del Zulia," 11 a.m.-2.30 p.m. |
| YV5RV—La Guaira, Venezuela | 4760 | 1,000 | "Emisora Vargas," 11 a.m.-2.30 p.m. |
| YV1RY—Coro, Venezuela .. | 4770 | 300 | "Radio Coro," 9 a.m.-3.10 p.m. |
| HJGB—Bucaramanga, Colombia | 4775 | 1,500 | "Radio Santander," 11 a.m.-2.45 p.m. |
| YV4RO—Valencia, Venezuela | 4780 | 300 | "La Voz de Carabobo," 9.30 a.m.-2.30 p.m. |
| *HJAB—Barranquilla, Colombia | 4785 | 1,000 | 'La Voz de Barranquilla.' |
| YV6RU—Cuidad Bolivar, Ven. | 4790 | 1,000 | "Ecis del Orinoco," 10.30 a.m.-2.30 p.m. |
| HJDX—Medellin, Colombia | 4795 | 750 | "Ecos de la Montana," 10.30 a.m.-2.30 p.m. |
| HUB—San Salvador, El. Salv. | 4795 | 300 | "Alma Cuscatleca," 1.30-4 p.m. |
| YV1RX—Maracaibo, Venezuela | 4800 | 2,000 | "Ondas del Lago," 10.30 a.m.-2.30 p.m. |
| HJDU—Medellin, Colombia | 4805 | 750 | "Emisora Cultural," 10 a.m.-3 p.m. |
| Saigon, Indo-China .. .. | 4810 | 12,000 | |
| YV1RL—Maracaibo, Venezuela | 4810 | 400 | "Radio Popular," 11.30 a.m.-3.30 p.m. |
| HJBB—Cucuta, Colombia .. | 4815 | 750 | "La Voz de Cucuta," 10 a.m.-3 p.m. |
| *HCK—Quito, Ecuador .. .. | 4818 | 5,000 | "Radio Nacional." |
| *CE482—Antofagasta, Chile .. | 4820 | 5,000 | "La Voz del Norte." |
| XEJG—Guadalajara, Mexico .. | 4820 | 200 | 3-4 p.m. |
| Singapore, Malaya .. .. | 4825 | 10,000 | 10.30 p.m.-3.30 a.m. |
| PRJ4—Parnaiba, Brazil .. | 4825 | 500 | "Radio Educadora de Parnaiba." |
| HJED—Cali, Colombia .. | 4825 | 1,000 | "La Voz del Valle," noon-3.32 p.m. |
| Bogota, Colombia .. .. | 4835 | 5,000 | "Radio Continental de Bogota." |
| VUC2—Calcutta, India .. | 4840 | 10,000 | |
| YV1RZ—Valera, Venezuela .. | 4840 | 300 | "Radio Valera," 11 a.m.-2.40 p.m. |
| HJGF—Bucaramanga, Colombia | 4845 | 1,000 | "Radio Bucaramanga," 1-3 p.m. |
| HJCA—Bogota, Colombia .. | 4855 | 1,000 | "Radio Cristal," noon-3-10 p.m. |
| VQ7LO—Nairobi, Kenya .. | 4855 | 1,500 | 10-11 p.m., 3-7 a.m. |
| JKE2—Tokio, Japan (AFRS) .. | 4860 | 5,000 | 8.55 p.m.-2 a.m. |
| VUD3—Delhi, India .. .. | 4860 | 5,000 | |
| YV5RU—Caracas, Venezuela | 4860 | 5,000 | "Ondes Populares," 9.30 a.m.-4 p.m. |
| PRC5—Belem, Para, Brazil | 4865 | 2,000 | "Radio Club de Para," 11 a.m.-noon. |
| HJEX—Cali, Colombia .. | 4865 | 2,500 | "Radio Pacifico," noon-3 p.m. |
| YDD2—Batavia, Java .. .. | 4865 | 300 | 10.30 a.m.-12.30 p.m., 4.30-7.15, 9.30 p.m.-4 a.m. |
| ——Peitermaritzburg, St. Af. | 4875 | 1,000 | 4.45-6.30 p.m., 8.15-12.10 a.m., 2-9.05 a.m. |
| HJFH—Armenia, Colombia | 4875 | 3,000 | "La Voz de Armenia," 10.45 p.m.-3 p.m. |
| *ZAA—Tirana, Albania .. .. | 4880 | 3,000 | "Radio Tirana." |
| VUB2—Bombay, India .. .. | 4880 | 10,000 | |
| HJDP—Medellin, Colombia | 4885 | 2,500 | "Emisora Claridad," 11 a.m.-3 p.m. |

| Call and Location. | Freq. Kilo-cycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| PRF6—Manaos, Brazil .. | 4893 | 100 | "Governo del Estado do Amazones." |
| Colombo, Ceylon .. .. | 4900 | 7,500 | Relays ZOH, 1-5.30 a.m.; News, 1, 3. |
| CR7BV—Lourenco Marquis, Mozambique .. .. | 4900 | 600 | Eng. 4-10 a.m. |
| YDB2—Batavia, Java .. | 4910 | 300 | 10.30 a.m.-1.30 p.m., 3.30-6.30 p.m., 7.30-3.30 a.m. |
| JKF2—Kawaguchi, Japan (JOAK1) .. .. | 4910 | 300 | 8.25 p.m.-2 a.m. |
| JKF2—Nazaki, Japan (JOAK1) | 4910 | 5,000 | 7.55-10.15 a.m. |
| ZOY—Accra, Gold Coast .. | 4915 | 5,000 | 3.45-6.34 a.m., News 4.30, 6 a.m. |
| VUM2—Madras, India .. .. | 4920 | 10,000 | 3.45-5 a.m. |
| YV5RN—Caracas, Venezuela | 4920 | 5,000 | "Radio Caracas," 11 p.m.-5 a.m., 9 a.m.-3.30 p.m. |
| HJAE—Cartagena, Colombia | 4965 | 750 | 'Radio Colonial,' 11 p.m.-6 a.m., noon-3 p.m. |
| JKG2—Kawachi, Japan (JOAK2) | 4930 | 5,000 | 8.55 p.m.-2 a.m. |
| HJCW—Bogota, Colombia .. | 4945 | 1,000 | "Emisora Sur America," 11.45 p.m.-4.15 p.m. |
| *YVKO—Caracas, Venezuela .. | 4950 | 10,000 | 'Radiodifusora Nacional.' |
| HJCQ—Bogota, Colombia .. | 4955 | 1,000 | 'Radiodifusora Nacional,' 10 a.m.-4 p.m. |
| VUD2—Delhi, India .. .. | 4960 | 10,000 | |
| HC5HC—Riobamba, Ecuador | 4960 | — | "Ondes del Chimboraz," 2-4 p.m. |
| HJAE—Cartagena, Colombia | 4965 | 750 | "Laboratories Fuentes," noon-3.30 p.m. |
| YV5RM—Caracas, Venezuela .. | 4970 | 5,000 | "Radiodifusora Venez," 10.30 p.m.-3 p.m. |
| HJAG—Barranquilla, Colombia | 4975 | 450 | "Emisora Atlantica," noon-4.15 p.m. |
| YV5RN—Barquisimeto, Venez. | 4990 | 4,000 | "Radio Barquisimeto," - 11 a.m.-3.30 p.m. |
| WWV—Washington, D.C. .. | 5000 | 10,000 | Frequency check station. |
| YFA10—Macassar, Celebes .. | 5050 | 10,000 | 10.30-11.30 a.m., 4-6.30 p.m., 10 p.m.-2.30 a.m. |
| DTCY—American Zone, Germany .. .. | 5302 | 100,000 | 2-2.30 a.m. |
| *OAX3A—Huanuco, Peru .. | 5565 | 500 | "Radio Huanuco." |
| OAX1B—Piura, Peru .. .. | 5575 | 300 | |
| *HCJ—Tulcan, Ecuador .. | 5580 | 250 | "La Voz del Carchi." |
| OAX2A—Trujillo, Peru .. | 5620 | 250 | "Radio Trujillo," 11.30 a.m.-5 p.m. |
| HC1PM—Quito, Ecuador .. | 5725 | 150 | "El Palomar," 11.15 a.m.-5.05 p.m. |
| PZX—Paramribo, Surinam .. | 5750 | 750 | 11 a.m.-1.45 p.m. |
| YNJAT—Leon, Nicaragua .. | 5758 | 500 | "La Voz del Aire," 11 a.m.-2 p.m. |
| CE8AA—Santiago, Chile .. | 5805 | 500 | "Radio Soc. Nacional de Agricultura." Opens 11.30 p.m. |
| *Brazzaville, Fr. Eq. Africa | 5858 | 500 | "Radio Club." |
| CR7AA—Lourenco Marques, Mozambique .. .. | 5860 | 300 | |
| TIGPH—San Jose, Costa Rica | 5870 | — | "Alma Tica," noon-4 p.m. |
| HRN—Tegucigalpa, Honduras | 5875 | 750 | "La Voz de Honduras," 1-3 a.m., 11 a.m.-4 p.m. |
| ZRK—Capetown, South Africa | 5875 | 5,000 | 4.45-6.30 p.m., 4-9.05 a.m. 9 p.m.-3.5 a.m. |
| *CP15—La Paz, Bolivia .. | 5880 | 1,000 | "Radio El Condor." |
| Moscow, U.S.S.R. .. .. | 5890 | 15,000 | |
| OAX4Z—Lima, Peru .. .. | 5895 | 14,000 | "Radio Nac. de Peru," 11 a.m.-4.30 p.m. |
| ZNB—Mafeking, Bechuanaland | 5900 | 200 | 11 p.m.-1 a.m., 5-7.30 a.m. |
| LRM—Mendoza, Argentina .. | 5905 | — | (See 6180). |
| *XGOA—Chungking .. .. | 5920 | 4,000 | "The Voice of China." |
| *PJC1—Wijlemsted, Curtcao .. | 5935 | 3,000 | 'Radio Princess Juliana.' |
| OAX4V—Lima, Peru .. .. | 5940 | 500 | "Radio America," 2-5 p.m. |
| HH2S—Port-au-Prince, Haiti | 5950 | 300 | 10 a.m.-2.40 p.m. |
| VONH—St. Johns, Newfoundland .. .. .. | 5985 | 300 | 1.30-5 a.m., 9.30 a.m.-2 p.m. |
| HVJ—Vatican City, Vatican .. | 5970 | 25,000 | News for Britain, 7.15 a.m. |
| HCQRX—Quito, Ecuador .. | 5972 | 250 | "Radio Quito," 11.45 p.m.-3.45 p.m. |
| YSW—Santa Ana, El Salvador | 5980 | — | 9-10 a.m. |
| OAX4P—Huancayo, Peru | 5980 | 250 | "Radio Huancayo." |
| LRS1—Buenos Aires, Argentina | 5985 | 5,000 | "Radio Splendid," 10 a.m.-3 p.m. |
| *H13U—Santiago, D.R. .. .. | 5990 | 200 | "La Voz del Comercio." |
| Andorra, Andorra .. .. | 5997 | 20,000 | "Radio Andorra," 10 p.m.-10.30 a.m. |
| *PR13—Belo Horizonte, Brazil | 6000 | 5,000 | "Radio Inconfidencia." |
| ZFY—Georgetown, Br. Guiana | 6000 | 1,000 | "Voice of Guiana," 10.40 p.m.-12.15 p.m. |
| *ZOY—Accra, Gold Coast .. | 6000 | 5,000 | |
| VE9AI—Edmonton, Canada .. | 6005 | 200 | 2-6.5 p.m.; News, 5 p.m. |
| CFCX—Montreal, Canada .. | 6005 | 75 | Midnight, 3.15 p.m. |
| HP5K—Colon, Panama .. | 6005 | 250 | "La Voz de la Victor," 12.5 a.m.-4 p.m. |
| Voralburg, Austria .. | 6005 | — | |
| ZRH—Johannesburg, Sth. Africa | 6007 | 5,000 | 3-4 a.m. |
| CJCX—Sydney, N.S., Canada | 6010 | 1,000 | 11.55 p.m.-4 p.m. |
| CE601—Antofagasta, Chile .. | 6010 | 5,000 | "La Voz del Norte," 2-4 p.m. |
| OLR2A—Prague, Czechoslovakia | 6010 | 30,000 | |
| GRB—London, England .. | 6010 | 50,000 | European Service. |
| VUC2—Calcutta, India .. | 6010 | 10,000 | |
| *VUD2—Delhi, India .. .. | 6010 | 10,000 | |
| OAX4Q—Lima, Peru .. .. | 6010 | 2,000 | "Radio Victoria." |
| PRA8—Recife, Brazil .. .. | 6012 | 5,000 | "Radio Club Pernambuco." |
| *H13U—Santiago, Dom. Rep. | 6015 | 200 | "La Voz del Comercio." |
| JKD—Tokio, Japan (AFRS) .. | 6015 | 5,000 | 9.15 a.m.-2 a.m. |
| XEUI—Mexico City, Mexico .. | 6015 | 1,000 | "Radio Mil," to 6 p.m. and later. |
| HJCX—Bogota, Colombia .. | 6018 | 750 | "La Voz de Colombia," 12-1 a.m., to 4 p.m. |
| *CP41—Sucre, Bolivia .. .. | 6020 | 250 | "Radio Charcas." |
| XEUW—Vera Cruz, Mexico | 6020 | 250 | Midnight-5.45 p.m. |
| HI1J—San Pedro de Macoris, D.R. .. | 6025 | 250 | 10.35 a.m.-1.30 p.m. |
| PGD—Hilversum, Holland .. | 6025 | 5,000 | Good signal, 8 a.m. |
| HC1TR—Ibarra, Ecuador .. | 6025 | — | "Radio Equinoccial," 1-3 p.m. |
| IRF—Rome, Italy .. .. | 6025 | — | 4.30-7.40 a.m. |
| CFVP—Calgary, Canada .. | 6030 | 100 | 12.30 a.m.-6 p.m., News 5 p.m. |
| XEKW—Morelia, Mexico .. | 6030 | 500 | "El Eco de Michoacan" to 4 p.m. |
| HP5B—Panama City, Panama | 6030 | 150 | "Radio Miramar," 11 a.m.-4 p.m. |
| Kuala Lumpur, Malaya .. | 6035 | 7,500 | Relays Singapore, Eng., 1 a.m. |
| GWS—London, England .. | 6035 | 50,000 | European Service. |
| OAX6B—Arequipa, Peru .. | 6035 | 150 | "Radio Sur," 11 a.m.-noon. |
| CXA30—Montevideo, Uruguay | 6035 | 800 | "Radio Nacional," 10 a.m.-3 p.m. |
| HS8PD—Bangkok, Thailand .. | 6040 | 900 | 10-11.30 p.m., mid.-2.50 a.m.. English news 10.15, 11.15 p.m. |
| COBF—Havana, Cuba .. | 6040 | 1,000 | "Radio Libertad," 1 a.m.-4 p.m. |
| WRUA—Boston, U.S.A. .. | 6040 | 20,000 | To South America, 1.30-6 p.m. |
| WRUS—Boston, Mass., U.S.A. | 6040 | 50,000 | Noon-6 p.m. |
| Rangoon, Burma .. .. | 6045 | 7,500 | English, 1.45 a.m. |
| *CE604—Santiago, Chile .. | 6045 | 5,000 | Relays CE106. |
| XETW—Tampico, Mexico .. | 6045 | 100 | "La Voz de Tampico," 4.45 a.m.-4.45 p.m. |
| GSA—London, England .. | 6050 | 50,000 | European Service, 5-8.15 p.m.; Spanish, noon-3.45 p.m. |
| *HP5F—Colon, Panama .. | 6050 | 200 | "La Voz de Colon." |
| *OAX6A—Arequipa, Peru .. | 6050 | 250 | "Radio Arequipa." |
| HJFA—Pereira, Colombia .. | 6055 | 750 | "La Voz de Pereira," 11.30 a.m.-3.20 p.m. |
| VQ7LO—Nairobi, Kenya .. | 6060 | 1,500 | 12.30-1.30 a.m., Wed., Fri. only. |
| *CP47—Cochabamba, Bolivia .. | 6060 | — | "Radio Popular." |
| KNBI—San Francisco, Calif. .. | 6060 | 50,000 | 9 p.m.-3.05 a.m. |
| CKRZ—Sackville, Canada .. | 6060 | 50,000 | |
| WCBN—New York, U.S.A. .. | 6060 | 50,000 | |
| *VUD3—Delhi, India .. .. | 6060 | 5,000 | |
| "Radio Tannarive," Madagascar | 6065 | — | In French to 6.25 a.m. |
| WLKS—Kure, Japan (BCOF Station) .. .. .. | 6065 | 1,000 | |
| *LRS1—Buenos Aires, Argentina | 6065 | 5,000 | "Radio Splendid." |
| *SBO—Stockholm, Sweden .. | 6065 | 12,000 | 6.40-8.10 p.m. |
| Tetuan, Spanish Morocco .. | 6067 | 1,500 | "Radio Tetuan," 7.30-8 p.m. |
| CXA14—Montevideo, Uruguay | 6068 | 6,000 | "Radio Electrica." |
| Berlin, Germany .. .. | 6070 | 5,000 | 1-7.45 a.m. |
| CFRX—Toronto, Canada .. | 6070 | 1,000 | 10.55 p.m.-4.45 p.m. |
| GRR—London, England .. | 6070 | 50,000 | |
| *CXA3—Montevideo, Uruguay .. | 6078 | 1,000 | "Radio Ariel." Opens 10 p.m. |
| Radio SEAC, Colombo, Ceylon | 6075 | 7,500 | 12.30-3.30 p.m., 4.30-8.30 p.m., 9-30-midnight, 12.30-5 a.m. |
| CKFX—Vancouver, Canada .. | 6080 | 10 | 2.30 a.m.-8 p.m. |
| *WLWK—Cincinnati, Ohio .. | 6080 | 50,000 | 11.30 a.m.-6 p.m. |
| AFN—Munich, Germany .. | 6080 | 50,000 | News, 8 a.m. |
| *ZAA—Tirana, Albania .. | 6084 | 3,000 | "Radio Tirana." |
| WLKS—Kure, Japan .. .. | 6085 | 1,000 | 9.30 a.m.-1.30 a.m. |
| LRY-1—Buenos Aires, Argen. | 6090 | 25,000 | "Radio Belgrano," from 10.45 p.m. |
| ZNS—Nassau, Bahamas .. | 6090 | 200 | 12.45-1.15 a.m., 9 a.m.-2.05 p.m. |
| *CKOB—Sackville, N.B., Canada | 6090 | 50,000 | |
| Radio Luxembourg, Luxembourg | 6090 | 6,000 | English, Mondays, 7-9.30 a.m. |
| Tabriz, Azerbaijan, Iran .. | 6090 | — | 2-6.45 a.m. |
| CBFW—Montreal, Canada .. | 6090 | 7,500 | 12.30 a.m.-4.30 p.m. |
| *GWM—London, England .. | 6090 | 50,000 | |
| *KGEI—San Francisco, Calif. | 6090 | 50,000 | |
| ZYB7—Sao Paulo, Brazil .. | 6095 | 5,000 | "Radiodidusoar Sao Paulo," to 3 p.m. |
| *VUD7—Delhi, India .. .. | 6100 | 100,000 | "All India Radio." |
| *VLB—Shepparton, Victoria .. | 6100 | 100,000 | |
| *WNRX—New York, U.S.A. .. | 6100 | 50,000 | |
| Warsaw, Poland (Warsaw III) | 6100 | 10,000 | 3.55 a.m.-3 p.m., Eng. news 8.50 a.m. |
| TGOA—Guatamala City, Guata. | 6102 | — | "La Voz de la America" to 6 p.m. |

| Call and Location. | Freq. Kilocycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| XRRA—Peiping, China .. | 6103 | 10,000 | |
| PRE9—Fortaloza, Brazil .. | 6105 | 5,000 | "Ceara Radio Club," 8.30 a.m.-2 p.m. |
| HJFK—Pereira, Colombia .. | 6105 | 2,500 | "La Voz Amiga," 9 a.m.-3.30 p.m. |
| *CP2—La Paz, Bolivia .. .. | 6110 | 5,000 | "Radio Nac. de Bolivia." |
| GSL—London, England .. | 6110 | 50,000 | 1-8 p.m. |
| *OLR2C—Prague, Czechoslovakia | 6115 | 30,000 | |
| HIIG—Trujillo City, Dom. Rep. | 6117 | 150 | "Radio La Opinion" to 6 p.m. |
| OIXI—Helsinki, Finland .. | 6118 | 15,000 | 5-7 p.m., 9-midnight, 3.30-8.45 a.m. |
| LRX1—Buenos Aires, Argentina | 6120 | 10,000 | 2.45 a.m., 2.5 p.m. |
| KRHO—Honolulu, Hawaii .. | 6120 | 100,000 | |
| WOOW—New York, U.S.A. | 6120 | 50,000 | |
| *HP5H—Panama City, Panama | 6122 | 600 | "La Voz del Pueblo," 11 p.m.-4.15 p.m. |
| HI1G—Ciudad Trujillo, Dom. Rep. | 6125 | 150 | "Radio la Opinion," 1-9 p.m. |
| GWA—London, England .. | 6125 | 50,000 | European Service. |
| *OAX7A—Cuzco, Peru .. .. | 6128 | 250 | "Radio Cuzco." |
| CHNX—Halifax, Canada .. | 6130 | 500 | 11 p.m.-3.15 p.m. |
| COCD—Havana, Cuba .. .. | 6130 | 1,000 | "La Voz del Aire," 2 a.m.-5 p.m. |
| XEUZ—Mexico City, Mexico | 6130 | 1,000 | 8 a.m.-5.20 p.m. |
| Monte Carlo Radio, Monaco | 6130 | 300 | 6.30-8.30 p.m., 11 p.m.-1 a.m., 6-10.15 a.m. |
| KZRC—Cebu City, Philippines | 6130 | 1,000 | To 3 a.m., News 12.30 a.m. |
| VPD2—Suva, Fiji .. .. | 6135 | 400 | |
| Jaffa, Palestine .. .. .. | 6135 | 7,500 | "Sharq el Adna." |
| XGOY—Chungking, China .. | 6140 | 35,000 | News, 2 a.m. |
| *WRUA—Boston, Mass, U.S.A. | 6140 | 50,000 | |
| HJDE—Medellin, Colombia .. | 6145 | 5,000 | "La Voz de ntioquia," 9 a.m.-3.30 p.m. |
| VLR2—Melbourne, Aust. .. | 6150 | 2,000 | 8-9.10 a.m., .30 p.m., 2 a.m. |
| *CKRO—Winnipeg, Man., Canada | 6150 | 2,000 | |
| *YSPB—San Salvador, El. Salv. | 6150 | 350 | |
| GRW—London, England .. | 6150 | 50,000 | Noon-3.15 p.m. |
| *VUB2—Bombay, India .. | 6150 | 10,000 | "All India Radio." |
| CXA13—Montevideo, Uruguay | 6155 | 10,000 | "S.A. Difusora Radio-electric del Plata." |
| WEIN1—Vienna, Austria .. | 6155 | 300 | 4.45 p.m.-12.05 p.m. |
| CE615—Santiago, Chile .. | 6155 | 3,000 | "La Co-operative Vitalicia," 4 p.m. |
| *OAX1A—Chiclayo, Peru .. | 6155 | 300 | "Radio Delcar," 10 a.m.-4.35 p.m. |
| EPQ—Teheran, Iran .. .. | 6155 | 14,000 | "Radio Teheran." |
| CS2WD—Lisbon, Portugal .. | 6155 | 300 | 9.30 a.m.-1 p.m. |
| *CP39—Cochabamba, Bolivia | 6160 | 250 | "Radio el Mundo." |
| *CHAC—Sackville, N.B., Canada | 6160 | 50,000 | |
| CBRX—Vancouver, Canada .. | 6160 | 150 | Relays CBR to 7 p.m., news 6.55 p.m. |
| HJCD—Bogota, Colombia .. | 6160 | 5,000 | "Emisora Nueva Granada," 11 p.m.-3.30 p.m. |
| Saigon, French Indo-China .. | 6165 | 10,000 | Eng. 1.30-2.30 a.m. |
| *TILS—San Jose, Costa Rica .. | 6165 | 1,000 | "Radiodifusora Para Ti." |
| HER3—Berne, Switzerland .. | 6165 | 25,000 | 5.20-6.40 pm, 5-10.15 a.m. |
| *GWK—London, England .. | 6165 | 50,000 | |
| HHCM—Port-au-Prince, Haiti | 6167 | 100 | "N.B.C.," 10 p.m.-1.30 a.m., 10 a.m.-2 p.m. |
| *WCRC—New York, U.S.A. .. | 6170 | 50,000 | |
| CXA21—Montevideo, Uruguay | 6170 | 100 | "Radio Felix," 11 a.m.-2 p.m. |
| *CP37—Oruro, Bolivia .. .. | 6170 | 100 | "Radio Oruro." |
| CXA21—Montevideo, Uruguay | 6170 | 1,000 | |
| YDA2—Bandoeng, Java .. | 6170 | 250 | 11.30 a.m.-1 p.m., 4.30-7.15, 10 p.m.-3.30 a.m. |
| *YVKB—Caracas, Venezuela | 6172 | 10,000 | 'Radiodifusora Nacional.' |
| HI9T—Puerto Plata, Dom. Rep. | 6175 | 200 | "Broadcasting Tropical," 9.20 a.m.-1 p.m. |
| XEXA—Mexico City, Mexico .. | 6175 | 1,000 | "Radio Gobernacion," 1 a.m.-6 p.m. |
| LRM—Mendoza, Argentina | 6180 | 10,000 | "Radio Aconagua," 10.30 p.m.-4 p.m. |
| *TIRCC—San Jose, Costa Rica | 6180 | 300 | "Accion Catolica." |
| GRO—London, England .. | 6180 | 50,000 | 6.30-11.15 a.m., 6-8.15 p.m. |
| LLI—Oslo, Norway .. .. | 6185 | 5,000 | 4-10 a.m. |
| XECC—Puebla, Mexico .. | 6185 | 50 | 'Impulsoras del Progreso' 2-5 p.m. |
| WNRI—New York, U.S.A. .. | 6190 | 50,000 | 11.30 a.m.-2 p.m. |
| VUD7—Delhi, India .. .. | 6190 | 100,000 | 3.50-6.15 a.m. |
| *WNRE—New York, U.S.A. .. | 6190 | 50,000 | |
| GRN—London, England .. | 6195 | 50,000 | |
| "Radio International," Tangiers | 6195 | — | 5-10.30 a.m. |
| HJCT—Bogota, Colombia .. | 6198 | 10,000 | 'Radiodifusora Nacional,' 3.30 p.m. |
| YV6RD—Ciudad Bolivar, Venez. | 6200 | 1,000 | "La Voz de Guyana," to 4 p.m. |
| OAX1B—Piura, Peru .. .. | 6200 | 300 | "Radio Piura," 11 a.m.-4.30 p.m. |
| CP5—La Paz, Bolivia .. | 6205 | 250 | "Radio Illimani," 10.15 a.m.-2.45 p.m. |
| Noumea, New Caledonia .. | 6208 | 500 | 11 a.m.-noon, 8.30-10 p.m. |
| "Radio Romania Libera," Buch. | 6210 | — | 7.30-8 a.m. in English. |
| CE622—Santiago, Chile .. | 6220 | 5,000 | "Radio Sociadad de Mineria." |
| HJFB—Manizales, Colombia .. | 6225 | 4,500 | "Radio Manizales," 10 a.m.-3.35 p.m. |

| Call and Location. | Freq. Kilocycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| HRD2—La Caiba, Honduras .. | 6235 | 200 | "La Voz de Atlantida," to 3 p.m. |
| HJCF—Bogota, Colombia .. | 6240 | 750 | 'La Voz de Bogota," 10 a.m.-4.10 p.m. |
| HI1N—Ciudad Trujillo, Dominican Republic .. .. | 6245 | 1,000 | 'Broadcast Nac.,' 9 a.m.-3.25 p.m. |
| CE625—Santiago, Chile .. | 6250 | 5,000 | "Soc. de Nacional Agricultura." |
| YSUA—Cincuenta, El Salvador | 6250 | — | Signs 5 p.m. |
| TGRA—Guatamala City, Guat. | 6255 | — | "La Voz de Guardia Civil"; noon-3 p.m. |
| YSR—San Salvador, El. Salv. | 6270 | 1,000 | 'La Voz de El Salvador.' |
| YNXW—Managua, Nicaragua | 6275 | — | "Radio America." |
| ZPA1—Asuncion, Paraguay | 6276 | 2,500 | "Radio Nac. de Paraguay," to 4 p.m. |
| HCJB—Quito, Ecuador .. | 6280 | 1,000 | 11 a.m.-5 p.m. |
| OTM1—Leopoldville, Bel. Congo | 6282 | — | 5-7 p.m., 4-8 a.m. |
| OAX4M—Miraflores, Lima, Peru | 6310 | — | English sign off 4.55 p.m. |
| HI1Z—Cuidad, Trujillo, Dominican Republic .. .. | 6310 | 400 | Broadcasting "Nac." 9 a.m.-2.40 p.m., 3.45-9 a.m., 5-7 p.m. |
| Baden-Baden, Germany .. | 6321 | 1,000 | 4 p.m.-10 a.m.; "Suedwestfunk." |
| COCW—Havana, Cuba .. | 6325 | 1,000 | 11 p.m.-5 p.m. |
| OAX6E—Arequipa, Peru .. | 6333 | 3,000 | "Radio Continental," 11 a.m.-5 p.m. |
| HEI2—Berne, Switzerland .. | 6345 | 25,000 | |
| COKQ—Santiago, Cuba .. | 6345 | — | |
| HI1X—Ciudad Trujillo, Dominican Republic .. .. | 6350 | 1,000 | 10.45 p.m.-11.30 p.m., 10.30 a.m.-2.15 p.m. |
| HRP1—Sao Pedro, Sula, Dom. Republic .. .. .. | 6351 | 250 | 11 p.m.-12.30 a.m., 11.30 a.m.-3.30 p.m. |
| *HCJB—Quito, Ecuador .. | 6359 | 1,000 | |
| OAX4H—Lima, Peru .. .. | 6363 | 1,000 | "Radio Mundial." |
| CSX—Lisbon, Portugal .. | 6370 | 10,000 | 8.30 a.m.-noon. |
| HI9B—Santiago, Dom. Rep. .. | 6390 | 250 | 10 a.m.-1.40 p.m. |
| XPRA—Kunming, China .. | 6390 | 2,500 | 10.30 p.m.-3 a.m. |
| TGQA—Quezaltnango, Guatam. | 6405 | 300 | 6-8 a.m., 1-4 p.m. |
| OAX4G—Lima, Peru .. .. | 6410 | 300 | "Radio Lima," closes 4.40 p.m. |
| COHI—Santa Clara, Cuba .. | 6450 | 300 | "RHC—Cadena Azul," midnight-6.02 p.m. |
| TGWB—Guatamala, Guatamala | 6460 | 1,000 | "La Voz de Guatamala." |
| YNWW—Granada, Nicaragua | 6462 | — | "Radio Sport." |
| CP40—Cochabamba, Bolivia .. | 6510 | — | 12.30-3 p.m., "Radio Central." |
| TG2—Guatamala City, Guatam. | 6620 | 300 | "Radio Morse," 12.3 a.m.-5 p.m. |
| HIT—Ciudad Trujillo, Dominican Republic .. .. .. | 6630 | 200 | "El Hit del Aire," to 2.40 p.m. |
| Jaffa, Palestine .. .. | 6710 | 7,500 | 6.30-9 a.m. |
| YNPS—Managua, Nicaragua .. | 6765 | 800 | "La Voz de Nicaragua," 10 a.m.-5 p.m. |
| Singapore, Malaya .. .. | 6770 | 25,000 | 8.30 p.m.-5 a.m. |
| CP49—La Paz, Bolivia .. | 6770 | 500 | "Radio Municipal," 10.20 a.m.-2 p.m. |
| Jerusalem, Palestine .. .. | 6790 | 7,500 | 3.30-5 p.m., 4.30 a.m. |
| YNOW—Managua, Nicaragua | 6850 | 1,000 | "La Voz de la America Central." |
| HC4EB—Manta, Ecuador .. | 6870 | 375 | "Radio Manta"; 1-4 p.m. |
| TGOA—Quezantanango, Guata. | 6900 | — | Signs 5.05 p.m. |
| TGLB—Mazatenango, Guata. | 6905 | — | Noon-3 p.m. |
| YNQW—Managua, Nicaragua | 6917 | — | "La Voz de Victoria," 6 a.m.-4 p.m. |
| FZK6—Dakar, Senegal .. .. | 6917 | 1,200 | |
| FO8AA—Papeete, Tahiti .. | 6980 | 200 | "Radio Club de Tahiti," 3.30-4.30 p.m. |
| Brazzeville, French, Eq. Africa | 6980 | — | 6.30-8.30 a.m., in French |
| YNBO—Boaco, Nicaragua .. | 6985 | 30 | "La Voz de Boaco," 11 a.m.-3 p.m. |
| HC1VT—Ambato, Ecuador .. | 7000 | 250 | 1-3 p.m. |
| YNBH—Managua, Nicaragua | 7008 | 500 | "Radio Panamerica," 11 a.m.-3.20 p.m. |
| XPSA—Kweiyang, China .. | 7010 | 10,000 | |
| *Pontas Delgada, Azores .. | 7017 | 1,000 | |
| YNWW—Granada, Nicaragua | 7020 | — | "Radio Sport," 6 a.m.-3 p.m. |
| EAJ9—Malaga, Spain .. .. | 7020 | 1,000 | "Radio National," 7-10 a.m. |
| Valencia, Spain .. .. | 7037 | 300 | "Radio Mediterraneo." |
| YSI—San Salvador, El Salvador | 7040 | 100 | 6 a.m.-4 p.m. |
| FET15—Cordoba, Spain .. | 7045 | — | "Radio Cordoba," 6-9 a.m. |
| HC2CM—Guayaquil, Ecuador .. | 7055 | 250 | "Radiodifusora Iman," noon-4.15 p.m. |
| YNXW—Managua, Nicaragua | 7070 | — | "Radio America." |
| GRS—London, England .. | 7075 | 50,000 | |
| Y15KG—Baghdad, Iraq .. | 7090 | 50,000 | Closes 7.30 a.m. All Arabic. |
| GRM—London, England .. | 7120 | 50,000 | |
| Hargeisha, Br. Somaliland .. | 7125 | 1,000 | "Radio Somali," 2.30-3.30 a.m. |
| HC4FA—Portoviejo, Ecuador | 7140 | 100 | "La Voz de Manabi," 11.45 p.m.-3.30 p.m. |
| YNFP—Managua, Nicaragua .. | 7140 | 100 | "La Voz del Tropico," noon-3.15 p.m. |
| CR7RE—Malanga, Angola .. | 7145 | — | Midnight-12.45 a.m., 7.30-8.30 a.m. |
| GRT—London, England .. | 7150 | 50,000 | European Service. |

| Call and Location. | Freq. Kilocycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| "Radio Clube de Beira," Portuguese East Africa | 7150 | — | |
| XGOY—Chungking, China | 7153 | 35,000 | |
| HC1BF—Quito, Ecuador | 7160 | 500 | "Radio Commercial," 11.45 p.m.-4 p.m. |
| WEIN2—Vienna, Austria | 7175 | 200 | 4.45-12.05 p.m. |
| GRK—London, England | 7185 | 50,000 | European Service. |
| HC1AC—Quito, Ecuador | 7200 | 200 | "La Voz de la Democracia," to 4.15 p.m. |
| GWL—London, England | 7205 | 50,000 | North American service, 1.15-2 p.m. |
| FHE7—Dakar, Senegal | 7210 | 12,000 | |
| VUC2—Calcutta, India | 7210 | 10,000 | 10.30 p.m.-1 a.m.; News, 12.30 a.m. |
| HI8Z—Santiago de los Caballero | 7212 | 300 | To 4 p.m. Sundays. |
| VLQ2—Brisbane, Aust. | 7215 | 10,000 | 7.30 p.m.-1.30 a.m. |
| JCKW—Jerusalem, Palestine | 7220 | 7,500 | 8 a.m., Forces station. |
| XURA—Taipeh, Taiwan (Formosa) | 7220 | 3,000 | Closes 2.30 a.m. |
| GSW—London, England | 7230 | 50,000 | European service, 6.45-8.15 p.m. 5.30-9.30 a.m. |
| *KWID—San Francisco, Calif. | 7230 | 100,000 | |
| VLQ—Brisbane, Aust. | 7240 | 10,000 | |
| VUD8—Delhi, India | 7240 | 7,500 | 2 a.m.-6.30 a.m., news 2.45 a.m. |
| VUB2—Bombay, India | 7240 | 10,000 | English news, 12.30 a.m. |
| *GWI—London, England | 7250 | 50,000 | |
| KGEX—San Francisco, Calif. | 7250 | 100,000 | |
| VUM2—Madras, India | 7255 | 10,000 | |
| GSU—London, England | 7260 | 50,000 | 4.45-7.15 p.m.; 11 p.m.-10 a.m. |
| VUM2—Madras, India | 7260 | 10,000 | 1.30-3.30 p.m., Mid.-3.30 a.m. |
| VUD5—Delhi, India | 7270 | 100,000 | 11 p.m.-midnight, 4.15-5.15 a.m. |
| HI2T—Cuidad Trujillo, D.R. | 7275 | 7,500 | Closes 5 p.m. Sun., also on 11,900 kc. |
| JCK—Yamata, Japan (Relays JOAK1) | 7275 | 5,000 | 7.55 a.m.-2 a.m. |
| GWN—London, England | 7280 | 50,000 | European service, 5-8.15 p.m., 11 p.m.-2 a.m. |
| VLC8—Shepparton, Aust. | 7280 | 50,000 | |
| VLA—Shepparton, Victoria | 7280 | 100,000 | |
| JKA—Nazaki, Japan (JOAK2) | 7285 | 5,000 | 8.55 p.m.-2 a.m. |
| ZQP—Lusaka, Sth. Rhodesia | 7285 | — | 4.30-5 a.m. daily. |
| VUD3—Delhi, India | 7290 | 10,000 | 10.30 p.m.-midnight. |
| Munich, Germany | 7290 | — | 5-5.30 a.m., 7.30-10 a.m. |
| Athens, Greece | 7295 | 7,000 | 8-9.30 a.m., English 8.15 a.m. |
| BLA4—Hamburg, Germany | 7295 | 50,000 | British Forces Network, 4.30 p.m.-10 a.m. |
| FHE6—Dakar, Senegal | 7295 | 200 | |
| ZOY—Accra, Gold Coast | 7300 | 5,000 | Signs 6 a.m. |
| YSO—San Salvador, El Salvador | 7312 | 1,000 | "La Voz de Democracia," noon-4 p.m. |
| GRJ—London, England | 7320 | 50,000 | |
| *YNWW—Granada, Nicaragua | 7325 | — | "Radio Sport" (see 7020). |
| HC2DC—Guayaquil, Ecuador | 7350 | 250 | 11 a.m.-4.15 p.m. "Radio Cenit." |
| "Radio Prat," Santiago, Chile | 7415 | — | Moved from 7820 kc. |
| YNFT—Granada, Nicaragua | 7500 | 250 | "La Voz de la Sultana," 10 a.m.-3 p.m. |
| YNLAT—Granada, Nicaragua | 7615 | 300 | |
| YNDC—Leon, Nicaragua | 7660 | 200 | "La Voz de Leon," 11 a.m.-4 p.m. |
| Radio Sofia, Bulgaria | 7660 | 500 | 3.55-6 p.m., 3.55-8.40 a.m. |
| CB97—Santiago, Chile | 7820 | — | "Radio Prat." |
| WLWS—Cincinnati, Ohio, U.S.A. | 7832 | 75,000 | |
| ZAA—Tirana, Albania | 7850 | 3,000 | 7-10 a.m., English 9.15 a.m. |
| SUX—Cairo, Egypt, | 7860 | 10,000 | 5-9 a.m., News 6, 7 a.m. |
| HC1CG—Quito, Ecuador | 7875 | 200 | "Radio Ecuador Amazonico," 11.30 p.m. |
| PSL—Rio de Janeiro, Brazil | 7935 | 12,000 | 10-11 a.m. |
| EAJ31—Alicante, Spain | 7950 | 1,200 | "Radio Falange." |
| PMD—Bandoeng, Java | 7995 | 150 | 11.30 a.m.-1 p.m., 4.30-7.15 p.m. 10 p.m.-3.30 a.m. (to 4.30 a.m. Sun.) |
| FXE—Beirut, Syria | 8035 | 3,000 | 5-6.15 p.m., 10.15 p.m.-1.10 a.m., 3.30-9 a.m. |
| *CNR—Rabat, Morocco | 8035 | 12,000 | "Radio Maroc." |
| *EPF—Teheran, Iran | 8110 | 14,000 | |
| YNXW—Managua, Nicaragua | 8195 | — | "Radio America," noon-4 p.m. |
| COJK—Camaguey, Cuba | 8656 | 1,000 | 1-5.30 p.m. |
| COCO—Havana, Cuba | 8700 | 2,000 | "Radio America," midnight-4.30 p.m. |
| COCQ—Havana, Cuba | 8825 | 5,000 | 10.30 p.m.-5.15 p.m. |
| FGA—Dakar, Senegal | 8840 | 300 | |
| COKG—Santiago, Cuba | 8955 | 500 | "Cadena Oriental de Radio," 11 p.m.-5 p.m. |
| *THA2—Algiers, Algeria | 8960 | 10,000 | |
| COBZ—Havana, Cuba | 9026 | 250 | "Radio Salas," midnight. |
| CNR3—Rabat, Morocco | 9095 | 25,000 | 5-8 p.m., 6-10 a.m. |
| PJC1—Willemstad, Curacao | 9105 | 3,000 | 10-10.30 a.m. |
| *HAT4—Budapest, Hungary | 9125 | 20,000 | |
| CR6RB—Luanda, Angola | 9165 | — | Closes 7 a.m. |
| HEF4—Berne, Switzerland | 9185 | 25,000 | |

| Call and Location. | Freq. Kilocycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| H12G—Cuidad Trujillo, Dom. Re. | 9210 | 275 | "Radio la Opinion," 9.30 a.m.-3.30 p.m. |
| Khartoum, Anglo-Egyptian Sud. | 9220 | — | |
| YFA4—Macassar, Celebes | 9250 | 10,000 | 10.30-11.30 a.m., 4-6.30 p.m., 10 p.m.-2.30 a.m. |
| Radio Bucharest, Romania | 9252 | 2,000 | English 7.20 a.m. |
| CR8AA—Macao, Portug. China | 9235 | 500 | 11 p.m.-2.20 a.m., Eng. 12.50 a.m. |
| COBQ—Havana, Cuba | 9235 | — | "La Voz de Cuba," 1-5 p.m. and later. |
| YSF—Salvador, El Salvador | 9250 | 400 | "Radio Vangardia," 6-9 a.m., noon-4 p.m. |
| COCX—Havana, Cuba | 9270 | 1,000 | "Casa Levin," midnight-4 p.m. |
| Radio Rodina, Sofia, Bulgaria | 9315 | 5,000 | 4-6 p.m., 10-midnight, 4-6.30 a.m., 7-8.40 a.m., English news 8.30 a.m. |
| LRS—Buenos Aires, Argentina | 9317 | 17,000 | "Radio Splendid," midnight-4 p.m. |
| OAX4J—Lima, Peru | 9330 | 1,000 | "Radio International," 11 a.m.-5 p.m. |
| HBL—Geneva, Switzerland | 9345 | 20,000 | |
| COBC—Havana, Cuba | 9362 | 1,000 | "Radio Progreso," midnight-4 p.m. |
| Madrid, Spain | 9370 | 50,000 | "Radio Nat. de Espana," 3-8.30 a.m. |
| OTM2—Leopoldville, Bel. Congo | 9380 | 50,000 | 3.45-9 a.m., 5-7 p.m. |
| GRI—London, England | 9410 | 50,000 | Latin American service, 11 a.m.-3.30 p.m. |
| Belgrade, Yugoslavia | 9425 | 10,000 | 5-7.30 p.m. |
| CP21—Sucre, Bolivia | 9430 | 270 | "Radio La Pata," 2-4.45 a.m., 8-10 a.m. |
| COCH—Havana, Cuba | 9440 | 1,000 | "Radio O'Shea," 11 p.m.-6 p.m. |
| Brazzaville, Fr. Eq. Africa | 9440 | 50,000 | 4 a.m.-1 p.m., News 6.45, 8.45 a.m. |
| *OAX4W—Lima, Peru | 9440 | 1,500 | "Radio America." |
| TAP—Ankara, Turkey | 9465 | 20,000 | English, Mondays 8.30 News 5.45 a.m. |
| CR6RA—Luanda, Angola | 9470 | 250 | 7-8.30 a.m. |
| CP38—La Paz, Bolivia | 9480 | 250 | "Radio Nat. de Bolivia." |
| Moscow, U.S.S.R. | 9480 | — | |
| *GWF—London, England | 9490 | 50,000 | |
| KNBA—San Francisco, Calif. | 9490 | 50,000 | |
| KNBX—San Francisco, Cal. | 9490 | 100,000 | 9.0 p.m.-3.0 a.m. |
| WCBX—New York, U.S.A. | 9490 | 50,000 | 7.30-9.45 a.m. |
| WOOW—New York, U.S.A. | 9490 | 50,000 | 10 a.m.-11.15 a.m. |
| XEWW—Mexico City, Mexico | 9500 | 10,000 | "La Voz de America Latina," 12.30 a.m.-6.45 p.m. |
| OIX2—Helsinki, Finland | 9500 | 15,000 | 5.30-6.30 p.m., 10-midnight, 3.30-8.45 a.m. |
| *OAX6D—Arequipa, Peru | 9500 | 300 | |
| *OLR3B—Prague, Czechoslovakia | 9504 | 30,000 | |
| KZPI—Manila, Philippines | 9500 | — | 9.30 a.m.-4 a.m. |
| JVW2—Kawachi, Japan (JOAK) | 9505 | 7,500 | 8.25 p.m.-2 a.m. |
| HOLA—Colon, Panama | 9505 | — | Testing to 2 p.m. |
| *YUC—Belgrade, Yugoslavia | 9507 | 10,000 | |
| GSB—London, England | 9510 | 50,000 | 5.45-10.45 a.m., 11 a.m.-8 p.m. |
| KZFM—Manila, Philippines | 9515 | — | "The People's Station," |
| ZBW3—Hongkong, China | 9515 | 5,000 | 4.30-6 p.m., 10.30 p.m.-3 a.m. BBC news 11 p.m., 1 a.m. |
| OZF—Skemlebak, Denmark | 9518 | 6,000 | 4.35-7 a.m. |
| Paris, France | 9520 | 100,000 | 4.15-7 p.m., 7.15-9 p.m. |
| VLW7—Perth, Australia | 9520 | 2,000 | 10.30 p.m.-3.30 a.m. |
| *Radio SEAC, Colombo, Ceylon | 9520 | 7,500 | 12.30 a.m.-5 a.m. |
| GWJ—London, England | 9525 | 50,000 | European Service. |
| KGEI—San Francisco, Calif. | 9530 | 100,000 | 10.45 p.m.-2.30 a.m. |
| WGEO—Schenectady, U.S.A. | 9530 | 100,000 | Noon-5 p.m. |
| *VPD2—Suva, Fiji | 9535 | 4,000 | |
| *VUC2—Calcutta, India | 9535 | 10,000 | |
| JZI—Tokio, Japan | 9535 | 50,000 | Japanese Home Service. |
| SBU—Stockholm, Sweden | 9535 | 12,000 | 6.30-10 a.m. |
| HER4—Berne, Switzerland | 9535 | 100,000 | 1.30-3 p.m., 5.20-6.40 p.m., 5-10.15 a.m. |
| VLR2—Melbourne, Aust. | 9540 | 2,000 | 8-9.10 a.m., 7.30 p.m.-1.30 a.m. |
| VLC5—Shepparton, Aust. | 9540 | 50,000 | |
| VLB—Shepparton, Victoria | 9540 | 100,000 | |
| *Rangoon Radio, Rangoon, Burma | 9540 | 7,500 | |
| Paris, France | 9540 | 100,000 | 1.55-3.45 p.m., 5-5.45 a.m. |
| LKJ—Oslo, Norway | 9540 | 5,000 | 7-7.15 p.m., 10.45-12.30 a.m., 4-10 a.m. |
| Munich, Germany | 9540 | — | Relays "Voice of America," 5-10 a.m. |
| VE9AI—Edmonton, Canada | 9540 | — | |
| XEFT—Vera Cruz, Mexico | 9540 | 250 | "La Voz de Vera Cruz," 6p.m. and later. |
| ZL2—Wellington, N.Z. | 9540 | 10,000 | |
| HED5—Schwarzenburg, Switzerland | 9545 | 100,000 | |
| *OLR3A—Prague, Czechoslovakia | 9550 | 30,000 | News 7.45 a.m. |
| GWB—London, England | 9550 | 50,000 | European service. |
| WRUW—Boston, Mass. U.S.A. | 9550 | 20,000 | 11 a.m.-2 p.m. |
| KGEI—San Francisco, Calif. | 9550 | 50,000 | |
| *WGEO—Schenectady, U.S.A. | 9550 | 100,000 | |
| YDD3—Batavia, Java | 9550 | 3,000 | 10.30 a.m.-12.30 p.m., 4.30-7.15, 9.30 p.m.-3.30 a.m. |

| Call and Location. | Freq. Kilo-cycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| Batavia, Java | 9550 | — | English news 10.30 p.m. |
| XOPD—Hanchow, China | 9555 | 600 | 10.30 p.m.-Midnight (wa on 7400 k.c.) |
| Paris, France | 9558 | 100,000 | 5.15-9.15 p.m., 10-11.30 p.m., 10.30-11.15 a. |
| XETT—Mexico City, Mexico | 9558 | 500 | Midnight-6.45 p.m. |
| JVW4—Kawachi, Japan (JOAK) | 9560 | 5,000 | 8.25 p.m.-2 a.m. |
| VUM2—Madras, India | 9565 | 10,000 | 7-9.30 p.m., 10.30-11.30 p.m. |
| *KWIX—San Francisco, Calif. | 9570 | 50,000 | 3.15-8.45 p.m. |
| KWID—San Francisco, Calif. | 9570 | 100,000 | 12-4 a.m. |
| WRUA—Boston, U.S.A. | 9570 | 50,000 | |
| WRUS—Boston, Mass., U.S.A. | 9570 | 50,000 | |
| WRUW—Boston, Mass. U.S.A. | 9570 | 50,000 | 11 a.m.-noon, 1-3 p.m. |
| VLG—Melbourne, Victoria | 9580 | 10,000 | |
| GSC—London, England | 9580 | 50,000 | Eastern Broadcasts 4.30 p.m. |
| VLH-3—Melbourne, Aust. | 9580 | 10,000 | 8.45 p.m.-1.30 a.m. |
| PCJ—Hilversum, Holland | 9590 | 60,000 | 7-8 a.m. |
| VUD4—Delhi, India | 9590 | 10,000 | News 1 a.m. |
| WLWO—Cincinnati, Ohio, U.S.A. | 9590 | 75,000 | |
| VUM2—Madras, India | 9590 | 10,000 | 7-9.30 p.m., 10.30-11.5 p.m. |
| WLWK—Cincinnati, Ohio, U.S.A. | 9590 | 75,000 | 8.30-11.15 p.m. |
| GRY—London, England | 9600 | 50,000 | African Service, news 8.45 a.m.; 6 p.m. |
| CE960—Santiago, Chile | 9603 | 1,000 | "Radio La Americana, noon-4 p.m. |
| XEYU—Mexico City, Panama | 9605 | 250 | "Radio Univ. Nacional," 2-5 p.m. |
| HP5J—Panama City, Panama | 9605 | 380 | "La Voz de Panama," 10 a.m.-3.30 p.m. |
| JKE—Tokio, Japan (AFRS) | 9606 | 5,000 | 9.15 a.m.-8.45 p.m. |
| CHLS—Montreal, Canada | 9610 | 50,000 | 8.45-10.10 p.m., Sundays (to N.Z.) |
| YZC8—Rio de Janeiro, Brazil | 9610 | 25,000 | "Radio Tamoio," 9 a.m.-4.30 p.m. |
| Paris, France | 9620 | 100,000 | 5.15-7 p.m.-7.15-9 a.m. |
| *VLA2—Shepparton, Victoria | 9615 | 100,000 | |
| VLB9—Shepparton, Victoria | 9615 | 100,000 | 8-9.30 a.m. |
| VLC6—Shepparton, Australia | 9615 | 150,000 | |
| XERQ—Mexico City, Mexico | 9615 | 500 | "Radio Continental," heard 6 p.m. |
| Radio Addis Ababa, Ethiopia | 9620 | 1,000 | 1.45-4.10 a.m., English 3.15-4 a.m. |
| VP4RD—Port-of-Spain, Trinidad | 9625 | — | 11-11.20 p.m., 11.15 a.m.-12.15 p.m. |
| CBFO—Montreal, Canada | 9620 | 7,500 | |
| CXA6—Montevideo, Uruguay | 9623 | 3,000 | 8.30 a.m.-2 p.m. |
| GWO—London, England | 9625 | 50,000 | |
| CBFX—Montreal, Canada | 9630 | 7,500 | |
| CKLO—Sackville, N.B., Canada | 9630 | 50,000 | 9.45-11.5 a.m. |
| VUD7—Delhi, India | 9630 | 100,000 | |
| *VUB2—Bombay, India | 9630 | 10,000 | |
| XEBT—Mexico City, Mexico | 9635 | 10,000 | "Radio Pan-Americana," 1.45 a.m.-5 p.m. |
| "Radio Italiana," Turin, Italy | 9635 | 50,000 | Closes 10 a.m. |
| CX4S—Colonia, Uruguay | 9640 | 3,000 | 4-6 a.m., 9 a.m.-2 p.m. (see 11840). |
| LRY—Buenos Aires, Argentina | 9640 | 10,000 | 10-11 p.m., "Radio Belgrano." |
| KZRH—Manila, Philippines | 9640 | — | Good, 9 p.m.-4 a.m. |
| *CHMD—Sackville, N.B., Canada | 9640 | 50,000 | |
| *COX—Havana, Cuba | 9640 | 5,000 | Signs, 4 p.m. |
| GVZ—London, England | 9640 | 50,000 | Pacific Service |
| CR7BJ—Lourenco Marques, Mozambique | 9645 | 7,500 | Signs off 8.30 a.m. (or on CR7BE). |
| KNBA—San Francisco, Cal. | 9650 | 50,000 | 7.45-8.45 p.m. |
| HED6—Schwarzenburg, Switzerland | 9655 | 100,000 | |
| KRHO—Honolulu, Hawaii | 9650 | 100,000 | |
| WCRC—New York, U.S.A. | 9650 | 50,000 | |
| WCBN—New York, U.S.A. | 9650 | 50,000 | 1-3 p.m. |
| ——Jaffa, Palestine | 9655 | 7,500 | 3.45-4.45, 9.30 p.m.-1.30 a.m., 2.30-8.30 a.m. |
| WEIN3—Vienna, Austria | 9664 | 250 | 4.45 p.m.-12.05 p.m. |
| XGOY—Chungking, China | 9658 | 35,000 | 12.40-2.45 a.m. in Eng. |
| LRX—Buenos Aires, Argentina | 9660 | 7,500 | "Radio el Mundo," 10.30 p.m.-2 a.m., 9 a.m.-4 p.m. |
| VLQ3—Brisbane, Aust. | 9660 | 10,000 | 8 a.m.-2 a.m, |
| GWP—London, England | 9660 | 50,000 | |
| HVJ—Vatican City, Vatican | 9660 | 25,000 | News 6.15 a.m. |
| HHBM—Port-au-Prince, Haiti | 9660 | 1,000 | "Nac. Broadcasting Co." 10 p.m.-1.30 a.m. |
| *HOXC—Panama City, Panama | 9660 | 7,500 | |
| JKF—Nazaki, Japan (JOAK1) | 9665 | 5,000 | 10.25 a.m.-8.15 p.m. |
| WNBI—New York, U.S.A. | 9670 | 50,000 | |
| WRCA—New York, U.S.A. | 9670 | 50,000 | Noon-3.15 p.m. to South America. |
| GWT—London, England | 9675 | 50,000 | European Service, 7 p.m. 11 p.m.-4.30 a.m., 8.30-10.15 a.m., 4.30-4.45 p.m. |
| VLB2—Shepparton, Victoria | 9680 | 100,000 | |
| VLA3—Shepparton, Victoria | 9680 | 100,000 | |
| VLG8—Melbourne, Aust. | 9680 | 10,000 | |
| VLC2—Shepparton, Aust. | 9680 | 50,000 | |
| YDB4—Batavia, Java | 9680 | 3,000 | 10.30 a.m.-1.30 p.m., 3.30-4.30, 7.30 p.m.-3.30 a.m. |
| XEQQ—Mexico City, Mexico | 9680 | 1,000 | "Radio Panamericana," midnight-5.45 p.m. |
| EQC—Teheran, Iran | 9680 | 11,000 | "Radio Teheran," 5-7.30 a.m., news, 6.30 a.m. |
| VUD6—Delhi, India | 9680 | 10,000 | 10 p.m., 2 a.m., 3-5 a.m. |
| LRA1—Buenos Aires, Argentina | 9683 | 7,000 | "Radio del Estado." |
| GRX—London, England | 9690 | 50,000 | Pacific Service. |
| Singapore, Malaya | 9690 | — | 9 p.m.-5 a.m., English 11.45 p.m. |
| JKG—Kawachi, Japan (JOAK2) | 9695 | 5,000 | 8.55 a.m.-7.45 p.m. |
| KZOK—Manila, Philippines | 9695 | 250 | 24 hours daily, except 4-9.30 a.m. Mon. |
| YDB4—Batavia, Java | 9680 | 3,000 | 10.30 a.m.-1.30 p.m., 3.30-4.30, 7.30 p.m.-3.30 a.m. |
| KCBF—San Francisco, Calif. | 9700 | 50,000 | 9 p.m.-2.30 a.m. |
| WLWS—Cincinnati, U.S.A. | 9700 | 75,000 | Noon-5 p.m. |
| Fort-de-France, Martinique | 9705 | 1,500 | "Radio Martinique," 2 a.m.-1 p.m. |
| CR7BE—Lourenco Marques, Moz. | 9710 | 10,000 | 7.55-9 a.m. |
| OAX4K—Lima, Peru | 9712 | 250 | "Radio Goicochea," 11 a.m.-3 p.m. |
| PRL7—Rio de Janiero, Brazil | 9720 | 50,000 | "Radio Nacional," 8.10 a.m.-2.30 p.m. |
| CE970—Valparaiso, Chile | 9728 | 1,000 | 11 p.m.-4 p.m., opens and signs in English. |
| XGOA—Chungking, China | 9730 | 4,000 | 10.30 p.m.-3.15 a.m; news 2 a.m. |
| Leipzig, Germany | 9730 | 12,000 | 3 p.m.-11 a.m. |
| CSW7—Lisbon, Portugal | 9740 | 10,000 | "Emissora Nacional," noon-1 p.m. |
| CTC2—Leopoldville, B. Congo | 9745 | 50,000 | English to 4 p.m. |
| KCBR—San Francisco, Calif. | 9750 | 200,000 | 9 p.m.-3 a.m. |
| TGWA—Guatamala City, Guata. | 9780 | 10,000 | 3 a.m.-6 p.m., signs in English. |
| XGOY—Chungking, China | 9810 | 35,000 | 11.30 p.m.-5.35 a.m., News 12.30 a.m. |
| OAX5C—Ica, Peru | 9810 | 150 | "Radio Universal," 10.30 a.m.-5 p.m. |
| GRH—London, England | 9825 | 50,000 | North American Service, 9.15 a.m.-2.45 p.m., |
| COBL—Havana, Cuba | 9833 | 1,000 | 'Radio Cadena Suaritos,' 12.15 a.m., 5.45 p.m. |
| KWIX—San Frtncisco, Calif. | 9855 | 50,000 | 7.15-8.30 p.m. to N.Z. |
| GRU—London, England | 9915 | 50,000 | |
| XDY—Mexico City, Mexico | 9924 | 8,000 | 3-3.15 a.m. |
| HCJB—Quito, Ecuador | 9960 | 1,000 | English, 11.30 a.m.-5 p.m. |
| XGOL—Faochow, China | 9995 | 100 | Fair, 11 p.m. |
| WWV—Washington, D.C., U.S. | 10,000 | 10,000 | Frequency check station. |
| SUV—Cairo, Egypt | 10055 | 10,000 | 5.30-8.37 a.m., News 7, 8 a.m. |
| PLY—Bandoeng, Java | 10060 | 3,000 | 11.30 a.m.-2 p.m., 4.30-7.15 p.m., 10 p.m.-3.30 a.m. ( to 4.30 a.m. Sun.) |
| HH3W—Port-au-Prince, Haiti | 10135 | 500 | 11.30 p.m.-7.30 a.m., 11 a.m.-3 p.m. |
| PSH—Rio de Janiero, Brazil | 10220 | 12,000 | 10-11 a.m., irregular. |
| XRRA—Peiping, China | 10260 | — | English 11.45 p.m. |
| PLS—Batavia, Java | 10360 | 3,000 | 10.30 a.m.-1.30 p.m., 3.30-6.30 p.m., 9.30 p.m.-4 a.m. |
| Batavia, Java | 10380 | — | English news 10.30 p.m. |
| ZIK2—Belize, Br. Honduras | 10600 | 200 | 2-2.15 a.m., 4-5.48 a.m. |
| Tananarive, Madagascar | 10625 | — | 4.30-5.30 p.m., 8.30-10 p.m. |
| SDB2—Stockholm, Sweden | 10780 | 10,000 | 1-2 p.m., 3-11 a.m. |
| CSW6—Lisbon, Portugal | 11040 | 10,000 | 6.30-9 a.m. |
| Ponta Delgada, Azores | 11090 | 1,000 | 7-8 a.m., closes with clock chime. |
| YHN—Jokjakarta, Java | 11000 | — | English 9-9.30 p.m., 10.30-midnight. |
| HBQ—Geneva, Switzerland | 11402 | 20,000 | |
| FZK4—Dakar, Senegal | 11404 | 12,000 | |
| FGA8—Dakar, Senegal | 11424 | 200 | |
| XLRA—Hankow, China | 11490 | — | Signs off 2.30 a.m. |
| Moscow, U.S.S.R. | 11630 | — | News 6.30, 11.15, 11.45 p.m. |
| XTPA—Canton, China | 11650 | 1,000 | Opens 10 p.m. |
| GRG—London, England | 11680 | 50,000 | 5-7.15 a.m., 7.30-9 a.m., |
| HVJ—Vatican City, Vatican | 11688 | 25,000 | Fridays, 8.30-8.45 a.m. |
| XORA—Shanghai, China | 11695 | 500 | English 9-10 p.m. |
| HP5A—Panama City, Panama | 11695 | 1,000 | "Radio Teatre Estrella," to 4 p.m. |
| *CE1170—Santiago, Chile | 11700 | 1,000 | "Radio Bulnes." |
| Paris, France | 11700 | 100,000 | 3.45-4.30 a.m. |
| GVW—London, England | 11700 | 50,000 | G.F.P. 4-5.30 p.m., |
| *CBFY—Montreal, Canada | 11705 | 7,500 | |
| CKXA—Sackville, N.B., Canada | 11705 | 50,000 | |
| SBP—Stockholm, Sweden | 11705 | 12,000 | 7-1.45 a.m. (Sun. only). |
| VLG3—Melbourne, Aust. | 11710 | 10,000 | 6-6.40 p.m., 7.30-8.45 p.m. |
| WLWO—Cincinnati, Ohio | 11710 | 75,000 | |
| WLWR—Cincinnati, Ohio | 11710 | 75,000 | 11 a.m.-noon, 1-5 p.m. |
| HEI5—Berne, Switzerland | 11715 | 25,000 | |
| Dakar, Fr. West Africa | 11715 | — | "Radio Dakar," 12.15-12.45 a.m. |
| CBFL—Montreal, Canada | 11720 | 7,500 | |
| OTT—Leopoldville, Bel. Congo | 11720 | 50,000 | 10.30 p.m.-12.30 a.m. |
| PRL8—Rio de Janiero, Brazil | 11720 | 50,000 | For Britain, news 8 a.m. |
| CHOL—Montreal, Canada | 11720 | 50,000 | 8.45-10.10 p.m. Sundays, to N.Z. 7.15-11.5 a.m. |
| CRKX—Winnipeg, Canada | 11720 | 2,000 | 3 a.m.-6 p.m., Sundays, 7 p.m. |
| *GVV—London, England | 11730 | 50,000 | |
| Paris, France | 11730 | 100,000 | 4.15-9 a.m. |
| *EQE—Teheran, Iran | 11730 | 14,000 | "Radio Teheran." |
| KGEX—San Francisco, Calif. | 11730 | 100,000 | 9 p.m.-3 a.m. |

| Call and Location. | Freq. Kilocycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| Near East Broadcasting Station, Jaffa, Palestine | 11735 | 7,500 | Opens 12.30 a.m. in Arabic. |
| PHI—Hilversum, Holland | 11730 | 20,000 | 7-8 a.m. |
| WRUL—Boston, Mass, U.S.A. | 11730 | 50,000 | Spanish prog. to 6 p.m. |
| KGEX—San Francisco, Calif. | 11730 | 100,000 | |
| Singapore, Malaya | 11735 | 25,000 | 8.30 p.m.-5 a.m. |
| *CE1173—Santiago, Chile | 11,730 | 5,000 | 11.30 p.m.-4.5 p.m., relays CE106. |
| *LKQ—Oslo, Norway | 11735 | 5,000 | Opens 8 p.m. |
| *YUE—Belgrade, Yugoslavia | 11735 | 10,000 | |
| CR6RC—Luanda, Angola | 11735 | 500 | "Radio Club Angola," 7-8.30 a.m. |
| COCY—Havana, Cuba | 11740 | 1,000 | "R.H.C. Cadona Azul, 11 p.m.-5 p.m. |
| HVJ—Vatican City, Vatican | 11740 | 25,000 | Messages 7 p.m., irregular. |
| CE1174—Santiago, Chile | 11740 | — | Midnight-4 p.m. "Nuevo Mundo." |
| VLB10—Shepparton, Victoria | 11740 | 100,000 | 7-8.15 p.m., 8.30-2 a.m. |
| GSD—London, England | 11750 | 50,000 | 5.15 a.m.-3.45 p.m., 4-9 p.m. |
| HJCAB—Bogota, Colombia | 17755 | — | 'Radiodifusora Nacional' |
| VLR8—Melbourne, Aust. | 11760 | 2,000 | |
| VLA8—Shepparton, Victoria | 11760 | 100,000 | |
| VLG10—Melbourne, Victoria | 11760 | 10,000 | 8.55-11.50 p.m. |
| CKRA—Sackville, N.B., Canada | 11760 | 50,000 | 11.20 a.m.-12.35 p.m. English news, 11.30 a.m. |
| CBFA—Montreal, Canada | 11760 | 7,500 | |
| VUD7—Delhi, India | 11760 | 100,000 | 10.30 p.m.-midnight. |
| ZYB8—Sao Paulo, Brazil | 11765 | 5,000 | 'Radiodifusora Sao Paulo' 1 a.m.-2.35 p.m. |
| KNBI—San Francisco, Calif. | 11770 | 50,000 | Noon-5 p.m. |
| WGEA—Schenectady, N.Y. | 11770 | 100,000 | 8.15-11 a.m. |
| GVU—London, England | 11770 | 50,000 | European service. |
| KCBR—San Francisco, Calif. | 11770 | 200,000 | |
| VLA4—Shepparton, Aust. | 11770 | 100,000 | 8.30-11 a.m. |
| VLB3—Shepparton, Victoria | 11770 | 100,000 | |
| *HEI6—Berne, Switzerland | 11775 | 25,000 | |
| Saigon, French Indo-China | 11780 | 12,000 | Eng. 10-10.45 p.m., 1.30-2.30 a.m. |
| ZL3—Wellington, N.Z. | 11780 | 10,000 | |
| WEIN4—Vienna, Austria | 11785 | 200 | 4.45 p.m.-12.5 p.m. |
| HP5G—Panama City, Panama | 11780 | 600 | 5 a.m.-5 p.m. |
| *XENN—Mexico City, Mexico | 11780 | 500 | "Radiomundial." Closed 6 p.m. |
| OIX3—Helsinki, Finland | 11780 | 15,000 | 5-8.30 a.m. |
| VUD5—Delhi, India | 11790 | 100,000 | News 9.30 p.m. |
| WNRA—New York, U.S.A. | 11790 | 50,000 | |
| WRUS—Boston, Mass., U.S.A. | 11790 | 50,000 | |
| KNBA—San Francisco, Calif. | 11790 | 1,000 | |
| WLWO—Cincinnati, Ohio | 11790 | 75,000 | Noon-2 p.m., 2.15-3.15 p.m. |
| WRUA—Boston, Mass., U.S.A. | 11790 | 50,000 | 8.30 a.m.-11 a.m. |
| KCBF—San Francisco, Cal. | 11810 | 50,000 | 9 p.m.-3 a.m. |
| CE1180—Santiago, Chile | 11800 | 50,000 | "Radio Soc. Nac. de Agricultura." |
| GWH—London, England | 11800 | 50,000 | 10-11 p.m., 9.15 a.m.-2.45 p.m. |
| WOOW—New York, U.S.A. | 11810 | 50,000 | |
| "Radio Italiana," Turin, Italy | 11810 | 10,000 | 6-10 a.m. |
| *HOXB—Panama City, Panama | 11810 | 7,500 | (See 15100). |
| KCBF—San Francisco, Cal. | 11810 | 50,000 | 3.15-8.45 p.m. |
| KCBR—San Francisco, Calif. | 11810 | 200,000 | 3.15-8.45 p.m. |
| WGEA—Schenectady, U.S.A. | 11810 | 100,000 | 1-3 p.m. |
| VLB4—Shepparton, Victoria | 11810 | 100,000 | |
| HEU5—Berne, Switzerland | 11815 | 100,000 | 7.15-8.45 p.m. |
| GSN—London, England | 11820 | 50,000 | 6-10 p.m., Pacific Service. |
| XEBR—Hermosillo, Mexico | 11820 | 150 | "Radiodifusora de Sonora," 2 a.m.-6 p.m. |
| WCRC—New York, U.S.A. | 11830 | 50,000 | 11 p.m.-3.30 a.m., 5-9.30 a.m., 10 a.m.-6 p.m. |
| VLW3—Perth, Aust. | 11830 | 2,000 | 3.30-10.15 p.m. |
| VUD6—Delhi, India | 11830 | 10,000 | 3.30-10 p.m. |
| CXA19—Montevideo, Uruguay | 11835 | 1,500 | "Radio El Spectador," 11 p.m.-3 p.m. |
| Algiers, Algeria, North Africa | 11835 | 12,000 | 5.25-8 p.m., 5-11 a.m. |
| VLG4—Melbourne, Victoria | 11840 | 50,000 | |
| VLC7—Shepparton, Aust. | 11840 | 50,000 | 4.45-5.40 p.m. |
| *GWQ—London, England | 11840 | 50,000 | |
| Paris, France | 11840 | 100,000 | 7.15-9.30 a.m., 4-4.45 p.m. |
| *CXA8—Colonia, Uruguay | 11840 | 3,000 | |
| XMHA—Shanghai, China | 11860 | 1,000 | News, 10.45 p.m. |
| CE1185—Santiago, Chile | 11860 | 3,500 | "Radio El Mercurio," midnight-3.30 p.m. |
| GSE—London, England | 11860 | 50,000 | European service; also 11 a.m.-2.30 p.m., Spanish. |
| ZPA3—Asuncion, Paraguay | 11863 | 1,000 | "Radio Teleco," 9.55 a.m.-2.05 p.m. |
| HER5—Berne, Switzerland | 11865 | 100,000 | 10.30-11.15 a.m., 7.15-8.45 p.m., 1.30-3 p.m. |
| Munich, Germany (Voice of America) | 11870 | 75,000 | 5-10 a.m. |
| *VLC3—Shepparton, Aust. | 11870 | 50,000 | |
| WOOW—New York, U.S.A. | 11870 | 50,000 | |
| WNBI—New York, U.S.A. | 11870 | 50,000 | |
| *KWID—San Francisco, Calif. | 11870 | 100,000 | |
| *OLR4C—Prague, Czechoslovakia | 11875 | 30,000 | |
| VLG5—Melbourne, Victoria | 11880 | 10,000 | |
| VLH4—Melbourne, Aust. | 11880 | 10,000 | 8-10.15 a.m., 6.30-8.30 p.m. |
| *VLR3—Melbourne, Aust. | 11880 | 2,000 | |
| LRR—Rosario, Argentina | 11880 | 10,000 | 9 p.m.-2 p.m. |
| Paris, France | 11885 | 25,000 | 5-5.45 p.m., 6.30, 6.45 p.m. |
| KWIX—San Francisco, Calif. | 11890 | 50,000 | 9 p.m.-2.30 a.m. |
| WRCA—New York, U.S.A. | 11893 | 50,000 | |
| WNBI—New York, U.S.A. | 11893 | 50,000 | |
| *EQF—Teheran, Iran | 11895 | 14,000 | "Radio Teheran." |
| VLG9—Melbourne, Victoria | 11900 | 10,000 | Midnight-3.45 a.m. |
| CE1190—Santiago, Chile | 11900 | 1,000 | 11 p.m.-4 p.m. |
| *CKEX—Sackville, N.B., Canada | 11900 | 50,000 | |
| CXA10—Montevideo, Uruguay | 11900 | 10,000 | "Radio Electrica," 8.30 a.m.-2.15 p.m. |
| HI2T—Cuidad Trujillo, D.R. | 11900 | 7,500 | Signs 5 p.m. with march. |
| KWID—San Francisco, Calif. | 11900 | 100,000 | 5.30-11.30 p.m. |
| KZFM—Manila, Philippines | 11900 | — | "The People's Station," 11 p.m. |
| XGOY—Chungking, China | 11918 | 35,000 | News, 10 p.m. |
| GVX—London, England | 11930 | 50,000 | 2.15-6.15 a.m. |
| GVY—London, England | 11955 | 50,000 | 8 a.m.-3.15 p.m. |
| ZPA5—Encarnacion, Paraguay | 11955 | 2,500 | "Radio Encarnacion," 11 p.m.-2 p.m. |
| *HEK4—Berne, Switzerland | 11960 | 25,000 | |
| LRS2—Buenos Aires, Argentina | 11970 | — | "Radio Splendid" to 4 p.m. |
| Brazzaville, French Eq. Africa | 11970 | 50,000 | 5-7.30 p.m., 4 a.m.-1 p.m. English news, 5.30 p.m. |
| CE1180—Santiago, Chile | 12000 | 1,000 | "Radio Soc. Nac. de Agricultura," 11 p.m.-4 p.m. |
| GRV—London, England | 12040 | 50,000 | 10 a.m.-3.30 p.m. in Spanish. |
| GRF—London, England | 12090 | 50,000 | GFP, news 6, 7, 8 p.m. |
| HI3X—Cuidad Trujillo, D.R. | 12110 | 250 | 'Radiodifusora Oficiales,' 4 a.m.-2.40 p.m. |
| *ZNR—Aden, Arabia | 12115 | 250 | |
| Tananarive, Madagascar | 12127 | — | 11 p.m.-1.45 a.m., 3-5 a.m. |
| XMPA—Nanking, China | 12200 | — | 9 p.m.-2 a.m. |
| TFJ—Reykjavik, Iceland | 12235 | 7,000 | 2-2.30 a.m., Mondays. |
| CE1127—Punta Arenas, Chile | 12270 | — | "Radio Ejercito," 11 a.m.-5 p.m. |
| HCJB—Quito, Ecuador | 12455 | 10,000 | English to 5 p.m. |
| CS2WI—Parede, Portugal | 12400 | 300 | 1 a.m.-11.30 a.m. |
| Omdurman, Sudan | 13200 | — | "Sudan Broadcasting Service," 4-6 a.m. |
| WNRX—New York, U.S.A. | 14560 | 50,000 | |
| PSF—Rio de Janiero, Brazil | 14690 | 12,000 | 10.30-11 a.m. |
| PSE—Rio de Janiero, Brazil | 14935 | 12,000 | 10-10.30 p.m. irregular. |
| WWV—Washington, D.C., U.S. | 15000 | 1,000 | Frequency checks. |
| Addis Ababa, Ethiopia | 15065 | — | |
| GWC—London, England | 15070 | 50,000 | 4.30-9 p.m. |
| CBLX—Montreal, Canada | 15090 | 7,500 | 11 p.m.-4 p.m. |
| HOXA—Panama City, Panama | 15100 | 7,500 | 'Radio Central America,' 10 p.m.-4 p.m., English news 3.45 p.m. |
| EPB—Teheran, Iran | 15100 | 14,000 | "Radio Teheran." English news, 11.30. |
| GWG—London, England | 15110 | 50,000 | 11 a.m.-noon (Spanish). |
| HCJB—Quito, Ecuador | 15110 | 1,000 | Special Pacific broadcast to 5 p.m. |
| HED7—Schwarzenburg, Switzerland | 15120 | 100,000 | |
| KGEI—San Francisco, Calif. | 15130 | 50,000 | 5.30-10.30 p.m. |
| KCBR—San Francisco, Calif. | 15130 | 200,000 | Noon-5 p.m. |
| WLWS—Cincinnati, Ohio, U.S. | 15130 | 75,000 | 12.30-9.45 a.m. |
| GSF—London, England | 15140 | 50,000 | G.F.P. News 11 p.m. |
| YDC—Batavia, Java | 15145 | 3,000 | 10.30 a.m.-1.30 p.m., 9.30 p.m.-4 a.m. |
| WRCA—New York, U.S.A. | 15150 | 50,000 | 4-5.15 a.m., 7-11 a.m. |
| KNBX—San Francisco, Calif. | 15150 | 100,000 | |
| Munich 11, Germany | 15150 | 75,000 | 5.45-7 a.m. |
| SBT—Stockholm, Sweden | 15155 | 12,000 | 3-6.15 a.m. |
| VLG7—Melbourne, Aust. | 15160 | 10,000 | 8-10 a.m. |
| ZYB9—Sao Paulo, Brazil | 15160 | 5,000 | "Radiodifusora Sao Paulo." |
| VUD7—Delhi, India | 15160 | 100,000 | 3.15-6.30 p.m., News 4.30 p.m. |
| XEWW—Mexico City, Mexico | 15160 | 10,000 | "Ceara Radio Club," |
| VLB11—Melbourne, Aust. | 15160 | 100,000 | 9.30-11.30 a.m. |
| PRE9—Fortaleza, Brazil | 15165 | 5,000 | 11.30 a.m.-1.35 p.m. |
| *TGWA—Guatamala City, Guat. | 15170 | 10,000 | |
| LKV—Oslo, Norway | 15170 | 5,000 | 8 p.m.-1.30 a.m., 4-10 a.m. |
| GSO—London, England | 15180 | 50,000 | 7-9 a.m., 9.15-1.15 p.m. |
| OIX4—Helsinki, Finland | 15190 | 15,000 | Closes 11.30 p.m., also 4-8.30 a.m. |
| CKCX—Montreal, Canada | 15190 | 50,000 | 2-4 a.m., 11.20 a.m.-2.05 p.m. |
| VUD5—Delhi, India | 15190 | 100,000 | 3.15-6 p.m., 9-10.15 p.m. |
| CKCX—Montreal, Canada | 15190 | 50,000 | 2.15-4 a.m., 11.20 a.m.-2.5 p.m. |
| TAQ—Ankara, Turkey | 15195 | 20,000 | 9.15 p.m.-1.15 a.m. |
| WOOC—New York, U.S.A. | 15200 | 50,000 | 10.30 p.m.-9.30 a.m. |
| VLA6—Shepparton, Aust. | 15200 | 100,000 | 8.30-10 p.m. |
| VLB6—Shepparton, Victoria | 15200 | 100,000 | 9.15-11.30 a.m., 7-8 p.m. |
| VLC11—Shepparton, Victoria | 15210 | 50,000 | |
| WBOS—Boston, Mass., U.S.A. | 15210 | 50,000 | 4-10 a.m., 1-3 p.m. |
| KGEX—San Francisco, Calif. | 15210 | 100,000 | |
| *CHTA—Sackville, N.B., Canada | 15220 | 50,000 | |
| PCJ2—Hilversum, Holland | 15220 | 60,000 | To N.Z. Tuesdays, 9-10.30 p.m. |
| SEAC—Colombo, Ceylon | 15220 | 100,000 | 12.30 p.m.-5 a.m. |

| Call and Location. | Freq. Kilo-cycles. | Power in Watts. | Schedule, Slogan, English News, Periods, etc. |
|---|---|---|---|
| JVW—Kawachi, Japan (JOAK) | 15225 | 7,500 | 10.50 a.m.-8.15 p.m. |
| JVW3—Kawachi, Japan (JOAK) | 15225 | 5,000 | 10.50 a.m.-8.15 p.m. |
| VLG6—Melbourne, Aust. | 15230 | 10,000 | |
| WLWL—Cincinnati, Ohio, U.S. | 15230 | 75,000 | |
| *OLR5A—Prague, Czechoslovakia | 15230 | 30,000 | Noon-1 p.m. |
| KNBX—San Francisco, Calif. | 15240 | 100,000 | |
| Paris, France | 15240 | 100,000* | 4-4.45 p.m. |
| *YUF—Belgrade, Yugoslavia | 15240 | 10,000 | |
| VLG6—Melbourne, Aust. | 15240 | 10,000 | 10.30 a.m.-8 p.m. 3-4, 4.35-5.40 p.m. |
| WLWK—Cincinnati, Ohio | 15250 | 50,000 | 5-10 a.m. |
| WLWR—Cincinnati, Ohio | 15250 | 175,000 | 11 a.m.-5 p.m. |
| KRHO—Honolulu, Hawaii | 15250 | 100,000 | 9 p.m.-3 a.m. |
| GSI—London, England | 15260 | 50,000 | 6-10 p.m. |
| KCBF—San Francisco, Calif. | 15270 | 50,000 | |
| WCBN—New York, U.S.A. | 15270 | 50,000 | 5-9.30 a.m. |
| Singapore, Malaya | 15275 | — | 8.30 p.m.-5 a.m. |
| WNRE—New York, U.S.A. | 15280 | 50,000 | 4-11 a.m. |
| ZL4—Wellington, N.Z. | 15280 | 10,000 | |
| WRUL—Boston, Mass, U.S.A. | 15290 | 50,000 | 5-9 a.m., 9.10-10 a.m. |
| VUD3—Delhi, India | 15290 | 5,000 | 3.30 p.m.-midnight. |
| LRU—Buenos Aires, Argentina | 15290 | 5,000 | "Radio El Mundo." |
| GWR—London, England | 15300 | 50,000 | News 11 p.m. |
| Singapore, Malaya | 15300 | — | 8.30 p.m.-5 a.m. |
| GSP—London, England | 15310 | 50,000 | 9.15-11.45 a.m. |
| HER6—Berne, Switzerland | 15315 | 100,000 | 1.30-3 p.m. |
| VLA5—Shepparton, Victoria | 15320 | 100,000 | 4.45 p.m.-5.40 p.m. |
| CKCS—Montreal, Canada | 15320 | 50,000 | 4-9.30 a.m. |
| VLC4—Shepparton, Aust. | 15320 | 50,000 | 4.45-5.45 p.m., 8.55-10 p.m. 4.45-5.40 p.m. |
| YVPX—Caracas, Venezuela | 15315 | 10,000 | "Radiodifusora Nacional." |
| VLC4—Shepparton, Victoria | 15320 | 50,000 | |
| HEI7—Berne, Switzerland | 15320 | 25,000 | 1.30-3 p.m. |
| WGEO—Schenectady, U.S.A. | 15330 | 100,000 | 11 p.m.-9.30 a.m. |
| KNBX—San Francisco, Calif. | 15330 | 200,000 | 9 a.m.-3 p.m. |
| VUD8—Delhi, India | 15350 | 7,500 | 2-6.30 p.m., 8.30 p.m.-1.30 a.m. |
| Paris, France | 15350 | 25,000 | Midnight-2 a.m., 2.30-3.30 a.m. |
| **WRUA—Boston, Mass.** | **15350** | **50,000** | **4-11 a.m., 1-5 p.m.** |
| GRE—London, England | 15375 | 50,000 | |
| FHE—Dakar, Senegal | 15392 | 12,000 | 7-8.30 a.m. in French. |
| PZX5—Paramaribo, Surinam | 15405 | 750 | 10-11.30 p.m. |
| GWE—London, England | 15435 | 50,000 | Eastern Service, 11 p.m.-4 a.m. |
| GRD—London, England | 15450 | 50,000 | 6-10 p.m. |
| Brazzaville, French Eq. Africa | 15595 | 50,000 | 5-6.30 p.m., 9.45-12.45 a.m. |
| HEK5—Berne, Switzerland | 15875 | 25,000 | 7.20-7.50 a.m. |
| CNR3—Rabat, Morocco | 16666 | 25,000 | |
| HVJ—Vatican City, Vatican | 17445 | 25,000 | 1.40-2.15 a.m. |
| Brazzaville, French Eq. Africa | 17527 | 50,000 | 5-6.30 p.m., 9.45-12.45 a.m. |
| GVP—London, England | 17700 | 50,000 | 11 p.m.-2 a.m. |
| GRA—London, England | 17715 | 50,000 | 6-9 a.m. |
| LRA5—Buenos Aires, Argentina | 17720 | 7,000 | "Radio del Estado," 10-10.27 a.m. |
| GVQ—London, England | 17730 | 50,000 | News 11 p.m. |
| WRUW—Boston, Mass, U.S.A. | 17750 | 50,000 | 10.30 p.m.-7 a.m. |
| *OZI—Skemlebak, Denmark | 17750 | 6,000 | |
| KWID—San Francisco, Calif. | 17760 | 100,000 | 9 a.m.-12.15 p.m. |
| Paris, France | 17765 | 25,000 | Midnight-2 a.m. |
| KCBR—San Francisco, Calif. | 17770 | 200,000 | |
| OTC4—Leopoldville, Bel. Congo | 17770 | 50,000 | 4.30-9.45 a.m., 10 p.m.-2.30 a.m. |
| PHI—Hilversum, Holland | 17760 | 5,000 | |
| Radio SEAC—Colombo, Ceylon | 17770 | 7,500 | 8.30-9.30 p.m. |
| HED8—Schwarzenburg, Switzerland | 17770 | 100,000 | |
| WNBI—New York, U.S.A. | 17780 | 50,000 | 4-11 a.m., noon-5 p.m. |
| KGEX—San Francisco, Calif. | 17780 | 100,000 | 5.30-8,45 p.m. |
| HER7—Berne, Switzerland | 17784 | 25,000 | 8-8.30 p.m., Monday. |
| GSG—London, England | 17790 | 50,000 | 6-10 p.m. |
| *VLA7—Shepparton, Victoria | 17800 | 100,000 | |
| *VLB7—Shepparton, Victoria | 17800 | 100,000 | |
| KRHO—Honolulu, Hawaii | 17800 | 100,000 | 7.45-8.45 p.m. |
| WLWO—Cincinnati, Ohio | 17800 | 75,000 | 5-10 a.m. |
| GSV—London, England | 17810 | 50,000 | 5.30-9 p.m., 10 p.m.-1 a.m. |
| CKNC—Montreal, Canada | 17820 | 50,000 | 2.15-7 a.m. |
| Radio SEAC—Colombo, Ceylon | 17825 | 7,500 | 5.30 p.m.-12.30 a.m. |
| VUD10—Delhi, India | 17830 | 5,000 | 3.20-10.30 p.m., 10.40 p.m.-1 a.m. |
| WCBX—New York, U.S.A. | 17830 | 50,000 | 4 a.m.-noon, 1-3 p.m. |
| *HVJ—Vatican City, Vatican | 17840 | 25,000 | |
| VLA10—Shepparton, Victoria | 17840 | 100,000 | |
| VLC9—Shepparton, Victoria | 17840 | 50,000 | 2-4 p.m. |
| Radio Brazzaville, Eq. Africa | 17840 | 50,000 | |
| Brussels, Belgium | 17845 | 5,000 | 7-7.30 p.m., 11-11.30 p.m., 4-5, 7-8.30 a.m. |
| KCBF—San Francisco, Calif. | 17850 | 50,000 | United Network, 9 a.m.-3.45 p.m. |
| *PRL9—Rio de Janiero | 17850 | 50,000 | "Radio Nacional." |
| Paris, France | 17850 | 25,000 | 2.30-3.30 a.m. |
| GRP—London, England | 17870 | 50,000 | 3.30 a.m.-5 a.m. |
| WGEX—Schenectady, N.Y. | 17880 | 50,000 | 4-11 a.m. |
| KGEX—San Francisco, Calif. | 17880 | 100,000 | Noon-3 p.m. |
| GRQ—London, England | 18025 | 50,000 | 6-10 p.m. |
| GVO—London, England | 18080 | 50,000 | 3.15-5.15 a.m. |
| WNRA—New York | 18160 | 50,000 | 10.30 p.m.-6.15 a.m. |
| PLA—Batavia, Java | 18600 | 2,500 | 4-4.45 a.m. |
| PMA—Batavia, Java | 19345 | 2,500 | 4-4.45 a.m., Eng. 4.45-5 a.m. |
| WWV—Washington, D.C. U.S.A. | 20000 | — | Frequency check station. |
| KNBA—San Francisco, Calif. | 21460 | 50,000 | Noon-5 p.m. |
| Radio SEAC—Colombo, Ceylon | 21470 | 100,000 | |
| GSH—London, England | 21470 | 50,000 | 10 p.m.-6 a.m. |
| WOOW—New York, U.S.A. | 21500 | 50,000 | 4-11 a.m. |
| VUD—Delhi, India | 21510 | — | English news and summary, 10 p.m. Closes 1 a.m. |
| GSJ—London, England | 21530 | 50,000 | 10-4.15 a.m. |
| VLB-5—Shepparton, Victoria | 21540 | 100,000 | Forces transmissions. |
| GST—London, England | 21550 | 50,000 | 6-10 p.m. |
| WCRC—New York, U.S.A. | 21570 | 50,000 | 4-9.30 a.m. |
| WGEA—Schenectady, N.Y. | 21590 | 100,000 | 5-10 a.m. |
| VLB8—Shepparton, Victoria | 21600 | 100,000 | |
| VLA9—Shepparton, Victoria | 21600 | 100,000 | 2-4 p.m. |
| KNBA—San Francisco, Calif. | 21610 | 50,000 | |
| WNRA—New York, U.S.A. | 21610 | 50,000 | 2-11 a.m. |
| WLWL-1—Cincinnati, U.S.A. | 21650 | 75,000 | |
| GRZ—London, England | 21640 | 50,000 | 11 p.m.-2 a.m. |
| WLWS-2—Cincinnati, Ohio | 21650 | 75,000 | 11.45 p.m.-9.30 a.m. |
| GVR—London, England | 21675 | 50,000 | |
| VLC-10—Shepparton, Victoria | 21680 | 50,000 | 9.15-11.30 a.m. |
| *CHLA—Sackville, N.B., Canada | 21710 | 50,000 | |
| *GVS—London, England | 21710 | 50,000 | 6.45-10 p.m., Pacific Service. |
| Singapore, Malaya | 21720 | — | Closes 10.30 p.m. |
| WNRX—New York, U.S.A. | 21730 | 50,000 | 4-10 p.m. |
| *GVT—London, England | 21750 | 50,000 | 6-11 p.m. |
| WWV—Washington, D.C. | 25000 | — | Frequency check station. |
| GSQ—London, England | 25750 | 50,000 | |
| GSK—London, England | 26100 | 50,000 | 11.15 p.m.-3 a.m. |
| GSR—London, England | 26400 | 50,000 | |
| GSS—London, England | 26550 | 50,000 | |
| WWV—Washington, D.C., U.S. | 30000 | — | Frequency check station. |

# THE HOBBY OF DX-ING

THE term DX is an abbreviation of the word distance as used in the amateur radio transmitters' code, and those who indulge in the pastime of distant listening became known as dxers.

There are now DX Clubs established all over the world and the oldest club in Australasia is the New Zealand DX Club, Inc. This club had its beginnings 'way back in 1927.

Engineers of the stations throughout the world wonder how well their signals are being received and welcome letters from distant parts. Cards are called verifications as is any answer returned to the DX-er by the station confirming that the listener has really heard and logged that station. And it is the verification that is the basis of the DX hobby. Members try to see how many stations they can verify, while in the various branches of the N.Z. DX Club regular competitions are held and the verifications are judged on power and distance to ascertain the "Best-of-the-Month," etc.

As mentioned earlier correct and intelligent reports are appreciated, for such are of great value to the Station's chief engineer.

At each session at the dials, write in your "rough" note pad the day, date and time, and when a new signal is picked up jot down the frequency and particulars of items and advertisements heard.

About half an hour's programme is sufficient.

List the time of each item and see your watch is correct. Other details to be noted are the strength and quality of the signal and any fading or interference present.

When writing your report put your name, address and the date at the top of the page. Give the time in New Zealand Daylight Saving time (12 hours ahead of G.M.T.) and also convert into the station's local time and date. Fiji has the only stations on the same time belt as New Zealand. Several countries observe Summer Time, so if in doubt quote their Standard Time, or G.M.T. Volume can be graded as exceptionally loud, loud, moderately loud, fair or weak. Or the "R" and "QSA" code given in this article may be used, as it is internationlly known. It is important to give details of your receiver, aerial and earth systems, and weather conditions during reception. Other facts to be stated are fading (steady, light, severe, rhythmic, irregular, or nil), also rote the depth and duration of fades. Or if from another station try to name the offender. Tone, (say whether good and clear, harsh or mellow, rough and garbled, deep, or high). Give particulars of any peculiarity such as gongs sounding, clocks chiming, interval signal, whether man or lady announcer, etc. Write clearly and don't exaggerate by saying volume was "great" when you had almost to sit in the speaker to hear anything. Perhaps someone else may write and give a reverse report to your own, hence your first disappointment when no verification is forthcoming.

### AUDIBILITY.

R1—Faint Signals.
R2—Weak Signals.
R3—Can be copied.
R4—Fair Signals.
R5—Moderately Strong.
R6—Good.
R7—Strong Signal
R8—Very Strong.
R9—Overloading.

### READABILITY.

QSA1—Unreadable.
QSA2—Readable Occasionally.
QSA3—Readable with Difficulty.
QSA4—Readable
QSA5—Perfectly Readable.

Further particulars may be obtained from the Editor, N.Z. "DX-tra," 5 Dublin Street, Invercargill.

# AUSTRALASIAN BROADCAST LOG

Compiled by Arthur T. Cushen, 212 Earn Street, Invercargill. (* Proposed stations).

| Call and Location. | Freq. Kilo-cycles | Power in Watts. |
|---|---|---|
| 2CR—Cummock, N.S.W. | 550 | 10,000 |
| 6WA—Minding, W.A. | 570 | 10,000 |
| 2YA—Wellington, N.Z. | 570 | 60,000 |
| 3WV—Horsham, Vic. | 580 | 10,000 |
| 7ZL—Hobart, Tasmania | 600 | 2,000 |
| 2FC—Sydney, N.S.W. | 610 | 10,000 |
| 3AR—Melbourne, Victoria | 620 | 10,000 |
| 4QN—Townsville, Q. | 630 | 7,000 |
| 5CK—Crystal Brook, S.A. | 640 | 7,500 |
| 1YA—Auckland, N.Z. | 650 | 10,000 |
| 4KQ—Brisbane, Q. | 650 | 1,000 |
| 2DU—Dubbo, N.S.W. | 660 | 200 |
| 7BU—Burnie, Tasmania | 660 | 200 |
| 2CO—Corowa, N.S.W. | 670 | 7,500 |
| 2HR—Lochinvar, N.S.W. | 680 | 300 |
| 4AT—Atherton, Queensland | 680 | 500 |
| 7QT—Queenstown, Tasmania | 680 | 300 |
| 4YZ—Invercargill, N.Z. | 680 | 5,000 |
| 4QL—Longreach, Q. | 690 | 200 |
| 6WF—Perth, W.A. | 690 | 5,000 |
| 2NR—Lawrence, N.S.W. | 700 | 7,500 |
| 7NT—Kelso, Tasmania | 710 | 7,500 |
| 3YA—Christchurch, N.Z. | 720 | 10,000 |
| 6GF—Kalgoorlie, W.A. | 720 | 2,000 |
| 5CL—Adelaide, S.A. | 730 | 5,000 |
| 2BL—Sydney, N.S.W. | 740 | 10,000 |
| 2YH—Napier, N.Z. | 750 | 5,000 |
| 4QS—Dalby, Q. | 760 | 10,000 |
| 3LO—Melbourne, Vic. | 770 | 10,000 |
| 2KA—Katoomba, N.S.W. | 780 | 1,000 |
| 4TO—Townsville, Q. | 780 | 200 |
| 4YA—Dunedin, N.Z. | 790 | 10,000 |
| 2BH—Broken Hill, N.S.W. | 790 | 200 |
| 6WN—Perth, W.A. | 790 | 500 |
| 4QG—Brisbane, Q. | 800 | 2,500 |
| 2YB—New Plymouth, N.Z. | 810 | 100 |
| 5RM—Murray Heights, S.A. | 810 | 2,000 |
| 2NA—Newcastle, N.S.W. | 820 | 10,000 |
| 6GN—Geraldton, W.A. | 820 | 2,000 |
| 3GI—Sale, Victoria | 830 | 7,000 |
| 2YC—Wellington, N.Z. | 840 | 5,000 |
| 2CY—Canberra, F.T. | 850 | 10,000 |
| 4GR—Toowoomba, Q. | 860 | 500 |
| 7HO—Hobart, Tasmania | 860 | 500 |
| 2GB—Sydney, N.S.W. | 870 | 1,000 |
| 1YX—Auckland, N.Z. | 880 | 150 |
| 3UL—Warragul, Vic. | 880 | 200 |
| 4WK—Warwick, Q. | 880 | 100 |
| 6PR—Perth, W.A. | 880 | 500 |
| 5AN—Adelaide, S.A. | 890 | 500 |
| 2LM—Lismore, N.S.W. | 900 | 500 |
| 7AD—Devonport, Tas. | 900 | 500 |
| 4RK—Rockhampton, Q. | 910 | 2,000 |
| ZJV—Suva, Fiji | 920 | 400 |
| 2YN—Nelson, N.Z. | 920 | 30 |
| 2XL—Cooma, N.S.W. | 920 | 200 |
| 4VL—Charleville, Q. | 920 | 200 |
| 3UZ—Melbourne, Vic. | 930 | 600 |
| 3ZR—Greymouth, N.Z. | 940 | 100 |
| 4QR—Brisbane, Q. | 940 | 2,000 |
| 2UE—Sydney, N.S.W. | 950 | 1,000 |
| 5DN—Adelaide, S.A. | 960 | 500 |
| 3BO—Bendigo, Victoria | 970 | 500 |
| 4AY—Ayr, Q. | 970 | 500 |
| 2KM—Kempsey, N.S.W. | 980 | 300 |
| 2ZJ—Gisborne, N.Z. | 980 | 250 |
| 6AM—Northam, W.A. | 980 | 2,000 |
| 2GZ—Orange, N.S.W. | 990 | 2,000 |
| 2YD—Wellington, N.Z. | 990 | 500 |
| 4CA—Cairns, Q. | 1,000 | 300 |
| 4MB—Maryborough, Q. | 1,000 | 300 |
| 7EX—Launceston, Tas. | 1,000 | 500 |
| 3HA—Hamilton, Vic. | 1,010 | 750 |
| 4ZD—Dunedin, N.Z. | 1,010 | 60 |
| 2KY—Sydney, N.S.W. | 1,020 | 1,000 |
| 3DB—Melbourne, Vic. | 1,030 | 600 |
| 5PI—Crystal Brook, S.A. | 1,040 | 2,000 |
| 2CA—Canberra, F.T. | 1,050 | 2,000 |
| 4SB—Kingaroy, Q. | 1,060 | 2,000 |
| 1ZB—Auckland, N.Z. | 1,070 | 1,000 |
| 2RG—Griffith, N.S.W. | 1,070 | 200 |
| 6WB—Katanning, W.A. | 1,070 | 2,000 |
| 2LT—Lithgow, N.S.W. | 1,080 | 100 |
| 4RO—Rockhampton, Q. | 1,080 | 200 |
| 7HT—Hobart, Tas. | 1,080 | 500 |
| 3LK—Lubeck, Vic. | 1,090 | 2,000 |
| 4LG—Longreach, Q. | 1,100 | 2,000 |
| 6MD—Merridin, W.A. | 1,100 | 500 |
| 7LA—Launceston, Tas. | 1,100 | 500 |
| 2UW—Sydney, N.S.W. | 1,110 | 750 |
| 4BC—Brisbane, Q. | 1,120 | 1,000 |
| 2ZB—Wellington, N.Z. | 1,130 | 1,000 |
| 3CS—Colac, Victoria | 1,130 | 200 |
| 6PM—Perth, W.A. | 1,130 | 500 |
| 2AD—Armidale, N.S.W. | 1,130 | 200 |
| 4YO—Dunedin, N.Z. | 1,140 | 150 |
| 2HD—Newcastle, N.S.W. | 1,140 | 500 |
| 2WG—Wagga, N.S.W. | 1,150 | 2,000 |
| *3XC—Timaru, N.Z. | 1,160 | 2,000 |
| 7ZR—Hobart, Tas. | 1,160 | 500 |
| 2NZ—Inverell, N.S.W. | 1,170 | 2,000 |
| 2ZM—Gisborne, N.Z. | 1,180 | 90 |
| 3KZ—Melbourne, Vic. | 1,180 | 600 |
| 2CH—Sydney, N.S.W. | 1,190 | 750 |
| 5KA—Adelaide, S.A. | 1,200 | 500 |
| 3YL—Christchurch, N.Z. | 1,200 | 300 |
| 2GF—Grafton, N.S.W. | 1,210 | 200 |
| 3YB—Warrnambool, Vic. | 1,210 | 200 |
| 6KG—Kalgoorlie, W.A. | 1,210 | 500 |
| 4AK—Oakey, Q. | 1,220 | 2,000 |
| 2NC—Newcastle, N.S.W. | 1,230 | 2,000 |
| 3TR—Sale, Victoria | 1,240 | 1,000 |
| 6IX—Perth, W.A. | 1,240 | 500 |
| 1ZM—Auckland, N.Z. | 1,250 | 750 |
| 9PA—Port Moresby, N.G. | 1,250 | 500 |
| 3SR—Shepparton, Victoria | 1,260 | 2,000 |
| 2SM—Sydney, N.S.W. | 1,270 | 1,000 |
| 3AW—Melbourne, Vic. | 1,280 | 600 |
| 4BK—Brisbane, Q. | 1,290 | 750 |
| 2TM—Tamworth, N.S.W. | 1,300 | 2,000 |
| 4ZB—Dunedin, N.Z. | 1,310 | 1,000 |
| 5AD—Adelaide, S.A. | 1,310 | 500 |
| 3BA—Ballarat, Vic. | 1,320 | 500 |
| 6KY—Perth, W.A. | 1,320 | 500 |
| 3SH—Swan Hill, Vic. | 1,330 | 200 |
| 4BU—Bundaberg, Q. | 1,330 | 500 |
| 2LF—Young, N.S.W. | 1,340 | 300 |
| 6TZ—Dardanup, W.A. | 1,340 | 2,000 |
| 3GL—Geelong, Vic. | 1,350 | 1,000 |
| 4GY—Gympie, Q. | 1,350 | 200 |
| 3MA—Mildura, Vic. | 1,360 | 200 |
| 2MO—Gunnedah, N.S.W. | 1,370 | 100 |
| 5SE—Mt. Gambier, S.A. | 1,370 | 200 |
| 6GE—Geraldton, W.A. | 1,370 | 500 |
| 4BH—Brisbane, Q. | 1,380 | 1,000 |
| 2GN—Goulburn, N.S.W. | 1,390 | 200 |
| 4MK—Mackay, Q. | 1,390 | 100 |
| 2ZA—Palmerston North, N.Z. | 1,400 | 1,000 |
| 2PK—Parkes, N.S.W. | 1,400 | 200 |
| 5AU—Port Augusta, S.A. | 1,400 | 200 |
| 2KO—Newcastle, N.S.W. | 1,410 | 500 |
| 3XY—Melbourne, Vic. | 1,420 | 600 |
| *6CI—Collie, W.A. | 1,430 | 500 |
| 3ZB—Christchurch, N.Z. | 1,430 | 1,000 |
| 2WL—Woollongong, N.S.W. | 1,430 | 500 |
| 2QN—Denilquin, N.S.W. | 1,440 | 200 |
| 4IP—Ipswich, Q. | 1,440 | 200 |
| 2MG—Mudgee, N.S.W. | 1,450 | 100 |
| 7DY—Derby, Tas. | 1,450 | 200 |
| 2CK—Cessnock, N.S.W. | 1,460 | 300 |
| 5MU—Murray Heights, S.A. | 1,460 | 200 |
| 3CV—Bendigo, Vic. | 1,470 | 500 |
| 2MW—Murwillumbah, N.S.W. | 1,470 | 500 |
| 2AY—Albury, N.S.W. | 1,480 | 200 |
| 2BE—Bega, N.S.W. | 1,490 | 200 |
| 4ZR—Roma, Q. | 1,490 | 200 |
| 2BS—Bathurst, N.S.W. | 1,500 | 200 |
| 3AK—Melbourne, Vic. | 1,500 | 200 |
| 5DR—Darwin, N.T. | 1,500 | 500 |

# PRINCIPAL NORTH AMERICAN BROADCAST STATIONS

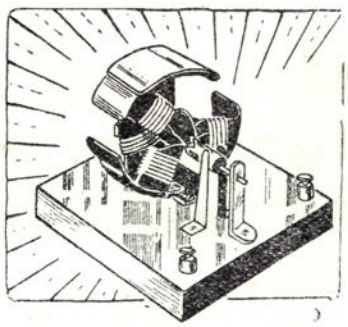
| Call and Location. | Freq. Kilo-cycles | Power in Watts. |
|---|---|---|
| KMVI—Wailuku, Hawaii | 550 | 1,000 |
| KSFO—San Francisco, Cal. | 560 | 5,000 |
| KMTR—Los Angeles, Cal. | 570 | 1,000 |
| KMJ—Fresno, Cal. | 580 | 5,000 |
| KGMB—Honolulu, Hawaii | 590 | 5,000 |
| KHQ—Spokane, Wash. | 590 | 5,000 |
| WOW—Omaha, Nebr. | 590 | 5,000 |
| CJOR—Vancouver, B.C. | 600 | 5,000 |
| KFSD—San Diego, Cal. | 600 | 5,000 |
| KFRC—San Francisco, Cal. | 610 | 5,000 |
| KGW—Portland, Ore. | 620 | 5,000 |
| KTAR—Phoenix, Arizona | 620 | 5,000 |
| KPOA—Honolulu, Hawaii | 630 | 10,000 |
| KFI—Los Angeles, Cal. | 640 | 50,000 |
| WSM—Nashville, Tenn. | 650 | 50,000 |
| WNBC—New York, N.Y. | 660 | 50,000 |
| WMAQ—Chicago, Ill. | 670 | 50,000 |
| KABC—San Antonia, Texas | 680 | 50,000 |
| KPO—San Francisco, Cal. | 680 | 50,000 |
| KULA—Honolulu, Hawaii | 690 | 10,000 |
| KXEP—El Paso, Texas | 690 | 5,000 |
| WLW—Cincinnati, Ohio | 700 | 50,000 |
| KIRO—Seattle, Wash. | 710 | 50,000 |
| KMPC—Hollywood, Cal. | 710 | 50,000 |
| WGN—Chicago, Ill. | 720 | 50,000 |
| KGJH—Havre, Mont. | 730 | 1,000 |
| KOOP—Ogden, Utah | 730 | 1,000 |
| CBL—Toronto, Ont. | 740 | 50,000 |
| KQW—San Jose, Calif. | 740 | 5,000 |
| KTRH—Houston, Texas | 740 | 50,000 |
| KXL—Portland, Ore. | 750 | 10,000 |
| WSB—Atlanta, Ga. | 750 | 50,000 |
| KGU—Honolulu, Hawaii | 760 | 2,500 |
| WJR—Detroit, Mich. | 760 | 50,000 |
| KOB—Albuquerque, N.M. | 770 | 50,000 |
| KXA—Seattle, Wash. | 770 | 1,000 |
| WJZ—New York, N.Y. | 770 | 50,000 |
| WBBM—Chicago, Ill. | 780 | 50,000 |
| KECA—Los Angeles, Calif. | 790 | 5,000 |
| KGHL—Billings, Mont. | 790 | 5,000 |
| XELO—Cuidad Jaurex, Mex. | 800 | 150,000 |
| KGO—San Francisco, Cal. | 810 | 50,000 |
| WGY—Schenectady, N.Y. | 810 | 50,000 |
| WBAP—Fort Worth, Texas | 820 | 50,000 |
| WFAA—Dallas, Texas | 820 | 50,000 |
| KBOA—Kenneth, Mont. | 830 | 1,000 |
| WCCO—Minneapolis, Minn. | 830 | 50,000 |
| KOAG—Stillwater, Okla. | 840 | 10,000 |
| WHAS—Louisville, Ky. | 840 | 50,000 |
| KOA—Denver, Colo. | 850 | 50,000 |
| CFRB—Toronto, Ont. | 860 | 10,000 |
| WWL—New Orleans, La. | 870 | 50,000 |
| KTLW—Texas City, Texas | 880 | 1,000 |
| WCBS—New York, N.Y. | 880 | 50,000 |
| WENR—Chicago, Ill. | 890 | 50,000 |
| WLS—Chicago, Ill. | 890 | 50,000 |
| KSGN—Sanger, Calif. | 900 | 1,000 |
| XEW—Mexico City, Mex. | 900 | 100,000 |
| KALL—Salt Lake City, Utah | 910 | 1,000 |
| KFKA—Greeley, Col. | 910 | 1,000 |
| KLX—Oakland, Cal. | 910 | 1,000 |
| KARK—Little Rock, Ark. | 920 | 5,000 |
| KXLY—Spokane, Wash. | 920 | 5,000 |
| KHJ—Los Angeles, Cal. | 930 | 5,000 |
| KTKC—Visalia, Cal. | 940 | 5,000 |
| KVAI—Amarillo, Texas | 940 | 1,000 |
| KFEL—Denver, Colo. | 950 | 5,000 |
| KJR—Seattle, Wash. | 950 | 5,000 |
| KOOL—Phoenix, Ariz. | 960 | 5,000 |
| KMA—Shenandoah, Iowa | 960 | 5,000 |
| KROW—San Francisco, Cal. | 960 | 5,000 |
| KMON—Great Falls, Mont. | 970 | 5,000 |
| KOIN—Portland, Ore. | 970 | 5,000 |
| CKWX—Vancouver, B.C. | 980 | 5,000 |
| KFWB—Los Angeles, Cal. | 980 | 5,000 |
| KMBC—Kansas City, Mo. | 980 | 5,000 |
| CBW—Carman, Ma. | 990 | 50,000 |
| WNOX—Knoxville, Tenn. | 990 | 10,000 |
| KOMO—Seattle, Wash. | 1,000 | 50,000 |
| CBX—Lacombe, Alta. | 1,010 | 50,000 |
| KLRA—Little Rock, Ark. | 1,010 | 50,000 |
| KDKA—Pittsburg, Pa. | 1,020 | 50,000 |
| KFVD—Los Angeles, Cal. | 1,020 | 5,000 |
| KWBU—Corpus Christi, Texas | 1,030 | 50,000 |
| WBZ—Boston, Mass. | 1,030 | 50,000 |
| WHO—Des Moines, Iowa | 1,040 | 50,000 |
| KRKL—Kirkland, Wash. | 1,050 | 250 |
| XEG—Monterey, N.L. | 1,050 | 150,000 |
| KYW—Philadelphia, Pa. | 1,060 | 50,000 |
| KNX—Los Angeles, Cal. | 1,070 | 50,000 |

| Call and Location. | Kilo-cycles. | Power in Watts. |
|---|---|---|
| KRLD—Dallas, Texas | 1,080 | 50,000 |
| KWJJ—Portland, Ore. | 1,080 | 10,000 |
| KING—Seattle, Wash. | 1,090 | 10,000 |
| XERB—Rosarito Beach, Mex. | 1,090 | 50,000 |
| KJBS—San Francisco, Cal. | 1,100 | 1,000 |
| KFAB—Omaha, Nebr. | 1,110 | 50,000 |
| KIPA—Hilo, Hawaii | 1,110 | 1,000 |
| KXLA—Pasadena, Cal. | 1,110 | 10,000 |
| WBT—Charlotte, N.C. | 1,100 | 50,000 |
| KMOX—St. Louis, Mo. | 1,120 | 50,000 |
| CBR—Vancouver, B.C. | 1,130 | 5,000 |
| KWKH—Shreveport, La. | 1,130 | 50,000 |
| KGDM—Stockton, Cal. | 1,140 | 5,000 |
| KRKD—Los Angeles, Cal. | 1,150 | 1,000 |
| KRSC—Seattle, Wash. | 1,150 | 1,000 |
| KGFM—Great Falls, Mont. | 1,150 | 5,000 |
| KSL—Salt Lake City, Utah | 1,160 | 50,000 |
| WJJD—Chicago, Ill. | 1,160 | 50,000 |
| KPUG—Bellingham, Wash. | 1,170 | 1,000 |
| KSDJ—San Diego, Cal. | 1,170 | 5,000 |
| KVOO—Tulsa, Okla. | 1,170 | 50,000 |
| WHAM—Rochester, N.Y. | 1,180 | 50,000 |
| KEX—Portland, Ore. | 1,190 | 50,000 |
| KLIF—Oak Cliff, Texas | 1,190 | 1,000 |
| KYSC—Yuma, Arizona | 1,190 | 1,000 |
| WOWO—Fort Wayne, Ind. | 1,190 | 10,000 |
| WOAI—San Antonio, Texas | 1,200 | 50,000 |
| WCAU—Philadelphia, Pa. | 1,210 | 50,000 |
| WGAR—Cleveland, Ohio | 1,220 | 5,000 |
| XEB—Mexico City, Mex. | 1,220 | 20,000 |
| KHBC—Hilo, Hawaii | 1,230 | 250 |
| KCOK—Turale, Cal. | 1,240 | 250 |
| KHUM—Eureka, Cal. | 1,240 | 250 |
| KWSC—Pullman, Wash. | 1,250 | 5,000 |
| WREN—Topeka, Kansas | 1,260 | 5,000 |
| KGBX—Springfield, Mo. | 1,260 | 5,000 |
| KYA—San Francisco, Cal. | 1,260 | 1,000 |
| KGIL—San Fernando, Calif. | 1,260 | 1,000 |
| KTFI—Twin Falls, Idaho | 1,270 | 5,000 |
| KFJZ—Fort Worth, Texas | 1,270 | 5,000 |
| KFOX—Long Beach, Cal. | 1,280 | 1,000 |
| KIT—Yakima, Wash. | 1,280 | 1,000 |
| KXOB—Stockton, Cal. | 1,280 | 1,000 |
| KHSL—Chico, Cal. | 1,290 | 5,000 |
| KUOA—Siloam Springs, Ark. | 1,290 | 5,000 |
| KITO—San Bernadino, Cal. | 1,290 | 1,000 |
| KOL—Seattle, Wash. | 1,300 | 5,000 |
| KYNO—Fresno, Calif. | 1,300 | 1,000 |
| KVET—Austin, Texas | 1,300 | 1,000 |
| KFBB—Great Falls, Mont. | 1,310 | 5,000 |
| KWBR—Oakland, Calif. | 1,310 | 1,000 |
| WRR—Dallas, Texas | 1,310 | 5,000 |
| KDYL—Salt Lake City, Utah | 1,320 | 5,000 |
| KXYZ—Houston, Texas | 1,320 | 5,000 |
| KALE—Portland, Ore. | 1,330 | 5,000 |
| KFAC—Los Angeles, Cal. | 1,330 | 5,000 |
| KFH—Wichita, Kansas | 1,330 | 5,000 |
| KCRA—Sacramento, Cal. | 1,340 | 250 |
| KFRE—Fresno, Cal. | 1,340 | 250 |
| KGHF—Pueblo, Colo. | 1,350 | 500 |
| KCSB—San Bernardino, Cal. | 1,350 | 500 |
| KSRO—Santa Rosa, Cal. | 1,350 | 1,000 |
| KGB—San Diego, Cal. | 1,360 | 1,000 |
| KMO—Tacoma, Wash. | 1,350 | 5,000 |
| WSAI—Cincinnati, Ohio | 1,350 | 5,000 |
| KEEN—San Jose, Cal. | 1,370 | 1,000 |
| KFRO—Long View, Texas | 1,370 | 1,000 |
| WCOA—Pensacola, Fla. | 1,370 | 5,000 |
| KXLF—Butte, Mont. | 1,370 | 5,000 |
| KHON—Honolulu, Hawaii | 1,380 | 5,000 |
| KIDO—Boise, Idaho | 1,380 | 1,000 |
| KGER—Long Beach, Calif. | 1,390 | 5,000 |
| KSLM—Salem, Ore. | 1,390 | 1,000 |
| KRE—Berkeley, Cal. | 1,400 | 250 |
| KERN—Bakersfield, Cal. | 1,410 | 1,000 |
| WING—Dayton, Ohio | 1,410 | 5,000 |
| KUJ—Walla Walla, Wash. | 1,420 | 5,000 |
| XEXX—Tijuana, B.C., Mex. | 1,420 | 5,000 |
| KARM—Fresno, Cal. | 1,430 | 5,000 |
| KWKW—Pasadena, Cal. | 1,430 | 1,000 |
| KNEW—Spokane, Wash. | 1,430 | 5,000 |
| KPRO—Riverside, Cal. | 1,440 | 1,000 |
| KFMB—San Diego, Cal. | 1,450 | 250 |
| KORE—Eugene, Wash. | 1,450 | 250 |
| KIMA—Yakima, Wash. | 1,460 | 500 |
| KSO—Des Moines, Iowa | 1,460 | 5,000 |
| KELA—Centralia, Wash. | 1,470 | 1,000 |
| KIEM—Eureka, Cal. | 1,480 | 1,000 |
| KVOE—Santa Ana, Cal. | 1,480 | 1,000 |
| KTOH—Lihue, Hawaii | 1,490 | 250 |
| KYOS—Merced, Calif. | 1,490 | 250 |
| KSTP—St. Paul, Minn. | 1,500 | 50,000 |
| WTOP—Washington, D.C. | 1,500 | 50,000 |
| KGA—Spokane, Wash. | 1,510 | 10,000 |
| WLAC—Nashville, Tenn. | 1,510 | 50,000 |
| KOMA—Oklahoma City, Ok. | 1,520 | 50,000 |
| WKBW—Buffalo, N.Y. | 1,520 | 50,000 |
| KFBK—Sacramento, Cal. | 1,530 | 50,000 |
| WCKY—Cincinnati, Ohio | 1,530 | 50,000 |
| KCUL—Fort Worth, Texas | 1,540 | 1,000 |
| KGBC—Galverston, Texas | 1,540 | 1,000 |
| KXEL—Waterloo, Iowa | 1,540 | 50,000 |
| CKTB—St. Catherines, Ont. | 1,550 | 1,000 |
| KENT—Shreveport, La. | 1,550 | 500 |
| KSMO—San Mateo, Cal. | 1,550 | 1,000 |
| WLOA—Braddock, Pa. | 1,550 | 1,000 |
| KPMC—Bakersfield, Cal. | 1,560 | 1,000 |
| WQXR—New York, N.Y. | 1,560 | 10,000 |
| KCVR—Lodi, Cal. | 1,570 | 250 |
| XERF—Villa Acunna, Mex. | 1,570 | 50,000 |
| KOWL—Santa Monica, Cal. | 1,580 | 5,000 |
| KGVB—Great Bend, Kansas | 1,590 | 5,000 |
| KSJO—San Jose, Cal. | 1,590 | 1,000 |
| WAKR—Akron, Ohio | 1,590 | 5,000 |
| WWXL—Peoria, Ill. | 1,590 | 1,000 |
| XEMC—Mexico City | 1,590 | 5,000 |
| KASH—Eugene, Wash. | 1,600 | 1,000 |
| WAPX—Montgomery, Ala. | 1,600 | 1,000 |
| WFRC—Reidsville, N.C. | 1,600 | 1,000 |
| KLOU—Lake Charles, La. | 1,580 | 1,000 |

*How to Build*

# A MODEL ELECTRIC MOTOR

THERE are few greater thrills for a boy than to see spinning merrily an electric motor which he has made himself. Most boys, however, are a little reluctant to make such a



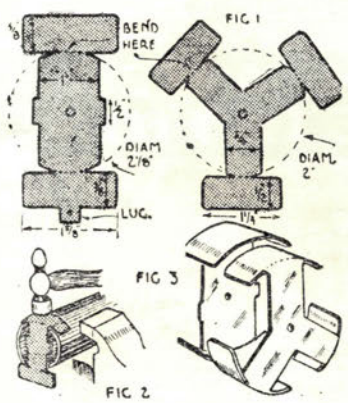
motor, because the shaping of the field magnets and the armature calls for some skill.

In the motor described below these difficulties will not be met, for the armature, instead of being built up of laminations in the ordinary way, is bent from a single piece of iron and requires no great ability.

The armature and the field magnet are shaped from soft, black iron, and thick galvanised iron will do very well. With a metal saw and a file, cut these parts to the shapes shown in Fig. 1. Then bend over the pole pieces as shown in Fig. 2, using a hammer and a piece of 2in. pipe fixed in a vice. Bore a ⅛in. hole in the middle of each piece for the spindle.

Put the two parts on a ⅛in. rod and see that the armature will spin round inside the field magnet with the poles nearly touching. Their appearance is shown in Fig. 3. Then wind the field magnet with 60 turns of No. 24 gauge enamelled wire, putting 30 turns on each half and keeping the windings even. The windings are kept in place with fine thread, and a layer of brown paper is put under each set so that the enamel will not be scratched off by the edge of the iron.

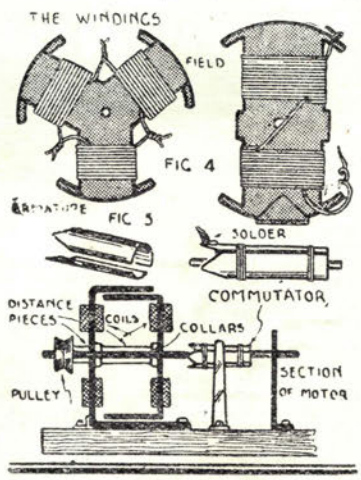
The armature is wound with No. 26 enamelled wire, putting about 8ft. on each arm. Put paper under each winding as before, and tie the windings in place with thread. Scrape the ends of the wire and twist the end of one coil round




the beginning of the next one. The wound field and armature are shown in Fig. 4. Screw the field magnet to a wooden base by means of the lug at the bottom, and pass the spindle through the centre. Mount the armature in place, putting distance pieces and collars on the spindle to keep the armature in position.

The other end of the spindle is supported on a metal bracket bent as shown and screwed to the base. Fix the armature to the spindle with a spot of solder, so that they turn together. For the commutator, cut three sectors of brass and bind them to a wooden or ebonite rod which fits tightly on the spindle. Two brushes of springy brass are bent and screwed to the base so that they bear lightly but firmly against the armature. Two small terminals are fixed to the base.

One end of the field winding is connected to one terminal and the other end to one brush. The other terminal is joined to the other brush. A four or six-volt battery is suitable for driving the motor, and its terminals are joined at the base terminals of the motor. The motor should be self-starting and, when running, it




may be found that its speed can be increased by turning the commutator round on the spindle. If due care has been used, this little motor will be found fast and efficient and capable of driving almost any small model.

THE BEST COSTS LESS AT THE "LAMPHOUSE" NEW ZEALAND'S LEADING RADIO & ELECTRICAL HOUSE

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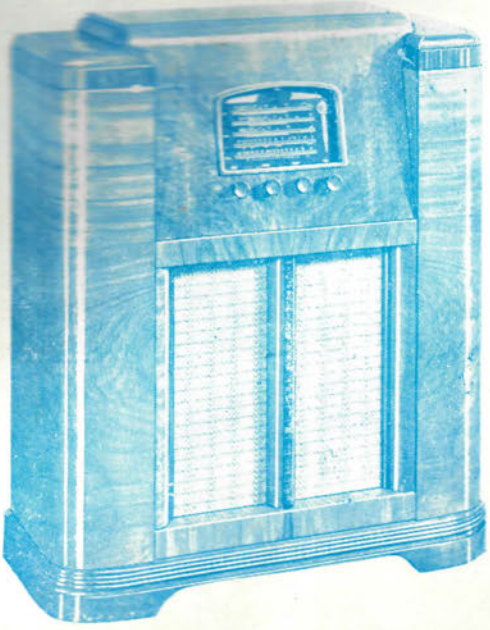


The

## ★ ENSIGN ★

## 7-VALVE BANDSPREAD CONSOLE

is always

## TO GIVE YOU WORLD-WIDE RECEPTION!

Features the latest Band Spread Tuning—Tuning that provides 20 times more space between dial calibrations, giving each foreign band a wider tuning range.

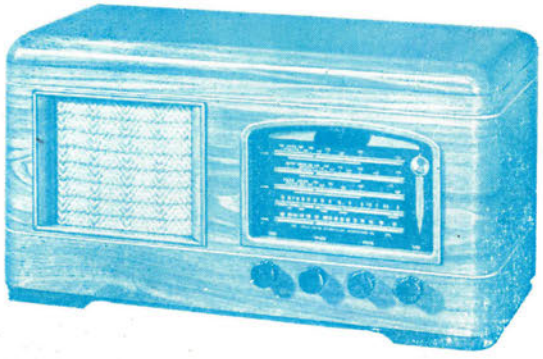
The "ENSIGN" BAND SPREAD has a world-wide coverage, enabling you to tune the overseas stations just like the locals. Features FULL ACTING A.V.C., MAGIC EYE INDICATOR, BEAUTIFUL SLIDE RULE DIAL, RICHLY VENEERED FLOOR MODEL CABINET

Bring the world right into your home with this 7-valve Super. Brings in New Zealand stations with amazing clarity. Each is easy to tune, and the following ranges are covered: Regular broadcast band, 550-1600 KC.; Short-wave inter band, 6-19 MC. Spread band tuning for the following short-wave bands: 15.10 to 15.50 MC; 11.65 to 12.30 MC; 9.475 to 9.80 MC. Valve comination: 6U7G R.F., 6K8GT Mixer, 6U7G I.F., 6Q7GT, 2nd Det., 6V6G Power Amplifier, 6X5GT Rectifier, 6U5 Tuning Indicator. Cabinet measures: Height 38in., width 32in., depth 17in. This is not only a world-wide receiver but a piece of furniture that would add to the charm of any room.—Cat. No. TR933 .. **£66/5/-**

## ENSIGN 7 VALVE BANDSPREAD MANTLE MODEL

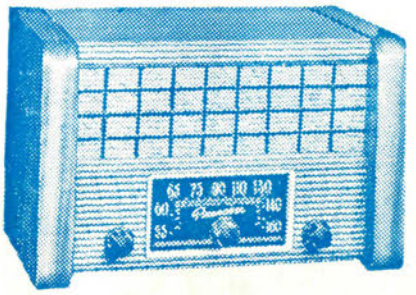
This is a similar Set to the 7-VALVE BANDSPREAD CONSOLE described above but is mounted in a BEAUTIFUL MANTLE MODEL CABINET; exquisitely veneered and measuring: Length, 24in.; Height, 13in.; Width, 11in. Uses 8in. mellow-tone Speaker.

Cat. No. TR930 .. .. **£49/15/-**



# "ENSIGN RADIOS"

## DESIGNED to MEET Your DEMAND!



IT'S AN

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**Reproduction that you can get only from a quality Radio.**

The New "PACEMAKER" gives a performance unequalled by any other Radio of its class.

Here's just a few of the FEATURES that help to make the "PACEMAKER" the leader in its field:—TONAL QUALITY SUPERB, MODERNISTIC CABINET DESIGN, POWERFUL PERFORMANCE. Last but not least, the Low Price!

Has full-acting A.V.C. to prevent fading and so keep volume uniform on all stations. Develops amazing 2 watts output seldom possible in a set of this size. Uses the latest type of fine fidelity 5in. EM Dynamic Speaker.

The "PACEMAKER BROADCAST 5" is quality built; uses only the finest standard parts throughout for the most dependable radio results. Dimensions: 14in. x 8½in. x 8¼in. 240 volts.

Cat. No. TR929— .. **£20/10/-**

△

*Absolute Fidelity*

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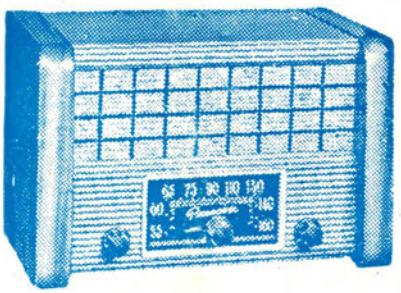
## THE "PACEMAKER" BROADCAST VIBRATOR MODEL

A similar style of set to that described above but

**Operating from a 6-Volt Battery**

(Either Car or Storage).

IDEAL FOR PEOPLE IN THE COUNTRY OR FOR TRAVELLING USE.



Uses five of the latest Miniature low-drain Valves — tone and volume controls — low battery drain only .75 amp.

Fitted with Special 5in. P.M. Speaker and mounted in attractive veneered Cabinet.

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